University of Alberta

Women and Computer Mediated Conferencing

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A thesis submitted to the Faculty of Graduate Studies and Research in partial fulfillment of the requirements for the degree of Masters in Education

in

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ABSTRACT

There are many changes happening in educational institutions as technology is used more frequently to disseminate information and encourage learning outside of a face-to-face setting. With the rapid advance and development of technological instructional tools, learners, instructors and the institutions alike are entering a new phase within the teaching-learning transaction.

The study analyses the experiences of seven graduate female students in a course that introduced computer mediated conferencing as a learning tool. The issues that face female learners in adapting to this learning environment as an adjunct to a face-to-face setting are reviewed in the context of gender issues in the learning environment. Implications fcr learners and instructors alike are given to ensure full participation by all learners in the educational setting.

DEDICATION

I dedicate my thesis to my daughters, Hilary and Karen.
May their own paths of learning be welcoming, intriquing and positive.

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CHAPTER ONE

INTRODUCTION

"I am a part of all that I have met"
Ulysses, Tennyson, 1833, p. 127-129

In adult education today, the roles of the learners, instructors and institutions are being examined and analyzed in light of the burgeoning growth of technological learning tools and what they permit us to do and to imagine. The impact of the introduction of learning technologies affects all of the constituents in the teaching-learning transaction, and significant changes in educational programmes are appearing. The extent to which the change is understood is not always clear and requires thoughtful analyses as the process is underway. As more traditional institutions incorporate the technologies into their repertoire of programme offerings, there is a convergence of the face-to-face instructional methodologies and the learning technologies methodologies which until recently, have been used more extensively within the field of distance education. (For the purposes of this study, distance education programmes are those offered to learners who are separated by geography from the instructor of the course and the institution. Traditional institutions refer to those offering face-to-face delivery, usually in a didactic or demonstration format.) The distance education centres have been attuned to the introduction of the learning technologies as a progression and development of the tools that have been offered to their

learners in the past. Currently, the traditional institutions have been adjusting to the changes in programme delivery through the use of a variety of electronic media. There is a reconceptualizing of relationships, intellectual authority, and societal expectations of education.

Recent Learning Tools and Uses

With most of the recent learning technologies such as the Internet, e-mail, and computer conferencing, the learner must be able to manipulate the fields of information by using a computer in order to participate fully in the teaching-learning transactions. Manipulation of a computer can range from the more simple point and click at an object on the screen, to being able to master complex and sophisticated programmes. A learner can be forced into a situation of learning how to use the technology prior to or in conjunction with accessing the information that forms part or all of the course itself. Adapting to the use of the computer and the changes in receiving information are predicted upon many factors similar to those factors which affect learning in a face-to-face, conventional setting: previous learning experiences and whether they were positive or negative and notions of self efficacy and the learners' perspective of knowledge. Adapting to technology is also based upon a learner's previous experiences with learning and degrees of enthusiasm for technology generally. As Fullan (1991) stated, all real change involves loss, anxiety, struggle, and these inevitabilities must not be ignored in the process of change.

According to recent statistics of computer usage, the majority of technology users are male (Carroll & Broadhead, 1998). Information regarding users of the Internet for example, list that 55% of Internet users are male, 45% are female. Similar percentages are documented for general computer usage (Carroll & Broadhead, 1998). This may suggest not only issues of access for females but also a different starting point from which to join the learning cycle based upon familiarity and ease of manipulation of the computer.

Encountering the Learning Tools

My interest and curiosity were piqued by the reactions of adult women learners as they attempted to negotiate their ways through a new experience of learning that required using computer mediated conferencing as an adjunct tool in a face-to-face setting. Computer mediated conferencing is a mode of communication that uses digitized text which is sent by computer to another person or several persons who have access to the conferencing system or software. The conferencing was used as a communication forum for the students and the instructor to enable them to discuss programme content issues on-line.

Many of the students had not been exposed to computer mediated conferencing prior to the course and many had underdeveloped computer skills in general. That is to say, some students had rarely used a computer and did not participate in automated services of any kind and had received no formal computer training. The women learners greeted the introduction of computer

mediated conferencing which required computer aided technology to access, with mixed reactions and comments which at times were negative and seemingly at odds with their usual assertive behaviour and strong sense of self that was portrayed in previous face-to-face graduate courses. In previous courses, these learners had been assertive and confident when expressing opinions in front of colleagues. They were enthusiastic, positive, and sure of themselves and not hesitant when engaging in verbal discussions. These reactions caused me to reflect on the impact of the addition of a technological learning tool on a group of adult female learners as well as my reactions and thoughts as I encountered computer mediated conferencing for the first time.

I had feelings of lowered self efficacy as I attempted to download the software from a disc that was accompanied by written instructions that assumed a certain level of expertise. I also came to question the viability of using the tool when so many other administrative and institutional factors had not been addressed. For example, the university help desk for computer users had no trained staff who were familiar with the computer conferencing system, (specifically FirstClass Client) and as such, students were left to their own devices if they were experiencing start up problems. Also, the server on which the computer conferencing ran, was extremely difficult to access due to large numbers of students vying for on-line time. It would often take over one hour of continuous dialing via a modem to connect to the server. This situation proved to be very frustrating and time consuming in the course requirements.

As some of the women had limited computer experience, I wondered if the learning outcomes would be different from those women who had computer experience that allowed them to manipulate the course conferences on-line. Would their access to learning via a computer be a barrier that would diminish their ability to develop knowledge and an information base? These and other questions led me to search for current literature both in books and on-line, that would discuss the stages of computer usage for females and how to establish positive encounters with the learning tools.

The current information concerning computer mediated conferencing portrayed the medium in a positive manner. The phrases used to describe conferencing talked about collaborative learning, building on-line communities of learners, plus the accessibility of learners to information and opinions of others. Computer mediated conferencing is also touted as an excellent cognitive tool concerning language and writing skills. These positive phrases appeared to be more descriptive of the ways in which some women learn and build their knowledge as evidenced in Belenky's et al (1986) Women's Ways of Knowing a seminal work concerning gender issues in postsecondary institutions and the construction of knowledge by women. In the book, Belenky and her colleagues interviewed female university students from diverse social and economic backgrounds. The authors' analyses of the life stories of the women resulted in five knowledge perspectives that described how some women thought about themselves in relation to life options. Briefly, the five categories are:

1. Silence - not knowing and feeling powerless.
2. Received Knowing - knowledge is outside oneself and knowledge comes from others more powerful.
3. Subjective Knowing - thoughts based on feeling with little articulation of same based on evidence.
4. Procedural Knowing - procedures for acquiring and validating knowledge are developed.
5. Constructed Knowing - knowing is tentative, not absolute, and the learner forms a part of the knowledge making.

Their analyses were a departure from the recognized psychology of learning as it recognized that females may learn or form knowledge in ways different to males. The categories of learning were not written as a sequence of stages for knowledge making but rather as examples of the ways in which some women learn. In this study the construct of knowledge making is used to refer to the methods by which females synthesize information, comments, and opinions to establish learning and knowledge development.

The literature concerning computer mediated conferencing suggested that there were reductions of barriers of timing and engagement for learning normally associated with female learners (Laurillard, 1996). Computer mediated conferencing also reduced the tacit cues that one might use to determine whether the user was male or female, thereby placing female users on an equal footing with male users. If one were to know the sex of a respondent, then it

may be reasonable to expect a certain kind of behaviour. For example, females may be more likely to be polite and attempt to assist others whereas males may attempt to dominate the discussions by making more comments of greater length. Learners using computer mediated conferencing would be encouraged to seek information and build their knowledge by reflecting on their own experiences and bringing those to bear in the conferencing situations. This too, mirrors the way in which many women form their knowledge (Belenky, 1986).

According to the literature, it appeared that a new learning culture and environment were quickly forming for on-line users that respected the diversity of learners even as they formulated their knowledge that was significant for their personal intellectual growth. Significant shifts in the ways in which learners could express their ideas and understandings as they formed as participants of the on-line community were also being documented (Harasim, 1993; Laurillard, 1996).

Traditionally in the face-to-face learning situations, the knowledge making deemed appropriate or the best way, was determined by the dominant societal group of learners-male learners (Lorber, 1994; Spender, 1995). This acceptable way of knowledge acquisition has been associated more closely with the characteristics of positivism and independent thinking and problem solving. Computer mediated conferencing apparently allowed female learners to share more in the partnership of learning than had previously been allowed or encouraged. Computer mediated conferencing is viewed as the flagship of the

learning tools that would encourage and indeed promote such characteristics of collaboration and on-line community building.

Purpose and Limitations

The purpose of this study was to investigate whether using computer mediated conferencing (CMC) enhanced the learning environment for adult female learners.

The following three sub-questions were addressed within the context of the original question:

1. Does computer usage itself pose a barrier to personal self efficacy and knowledge building for adult female learners?
2. Does on-line learning in the form of computer mediated conferencing foster collaboration in the learning environment for women?
3. Do female adult learners think that they are able to enhance their knowledge making by using computer mediated conferencing in a formal learning setting?

Shaping this study were some of my personal beliefs that may affect the research:

1. Some adult female learners may be less likely to achieve success initially with the learning technology tools as the computer is required for most connections to the tools. Women and girls are not considered the major users of computers for a variety of social and economic reasons.

Statistically, women are not the major computer users and therefore, less experienced than their male counterparts.

2. Some adult female learners may not discover that the learning technology reflects an improved climate for their knowledge making. This statement does not presuppose that technology will improve learning generally.
3. Some adult female learners tend to learn in a collaborative mode in a community building atmosphere. Based on information from the traditional face-to-face settings (Belenky 1986; Spender. 1995), women tend to use communication in collaborative settings to form their understanding.
4. There are inequities of power in adult education that are predicated upon gender and society's view of the roles ascribed to each sex. The societal roles are reinforced through education in the traditional settings (Merriam & Cafferella, 1991; Stalker, 1996).

Delimitations

This study has the following delimitations:

1. Participants will be restricted to female adult learners in an Adult and Higher Education programme at a Canadian university with only seven participants who self selected themselves to participate in the research.
2. Only one form of a learning technology will be examined, namely computer mediated conferencing (CMC) and more specifically, FirstClass Client (FCC) which is a specific "name" of software of computer conferencing.

3. Some of the interviewees were enrolled in the graduate course in which computer conferencing was introduced over one year ago, prior to the study and therefore, accurate recollections may be more difficult to gather.
4. The research was conducted over a five month period with two different courses that had two different access points for FCC and its usage. These differences in access and use requirements may be reflected in differences of ability to analyze and assess FirstClass Client. Each group had different vantages from which to view their own experiences based upon different points of access and manipulation.

Limitations

The limitations of the research may be described as follows:

1. As the group of participants was limited to adult females in adult education transferability of findings could be used most appropriately in contexts that mirror the research.
2. Potential participants were contacted by e-mail only, thereby perhaps eliminating learners who were not regular and or proficient users of e-mail.
3. Only one personal interview per participant was used in the study and personal biases may have unintentionally formed the questions of the interview in such a way as to incorporate biases in the answers.
4. No follow up was planned with participants after they had completed a second educational experience that used computer conferencing to determine if thoughts and opinions concerning the tool had been modified.

5. A personal interview was the only evaluation tool employed in the research.

Definition of Terms

The following words or concepts used in this research are defined as follows:

Adult - Learners who are university students at a graduate level: a minimum age of twenty-two years.

Adult Education - The study of the education of adults within a higher educational setting such as postsecondary institutions.

Computer Mediated Conferencing (CMC) or Computer Conferencing - A computer application via a software that allows interaction among many including instructors and learners in the form of communication such as e-mail, bulletin boards, synchronous and asynchronous chats. The focus is on asynchronous, moderated discussions with threading or organizing topiscs with similar themes. Digitized written text is sent via data lines and at each end there must be a computer linked to the conferencing that allows information and messages to be returned by other conference participants. One takes part in a discussion in which written comments are displayed on a computer monitor rather than verbal exchanges in a face-to-face setting. A learner will join the conference for which he or she is given access and will be able to read comments from the instructor and other learners on specified topics in folders that the instructor has created. The learner decides whether he or she will respond to the comments by typing text and sending the comments in a similar

fashion to the conference. This message will then appear on the listings of all those participants in the conference and they in turn may respond. Messages may be sent to the entire group or to individuals based upon the delivery mode selected. For example, messages may be sent to a personal mail box or to the general conference discussion. For the participants of my study, the instructor established folders with questions related to the content of the course which was reviewed in the face-to-face setting. A student would access a folder on a particular topic and respond. The instructor or a learner was given the opportunity to moderate the folder and its questions and comments to ensure that discussion was relevant and timely.

Convergence - The appearance of learning technologies and methodological approaches in traditional institutions that normally offer face-to-face learning programmes. Institutions that are not considered to offer instruction from a distance have acquired the technology that allows an electronic interface between the learner and the institution. The technology may be used to augment a face-to-face programme.

Educational Technology - Technological tools (those requiring the use of an electronic medium) are used to augment or replace traditional face-to-face teaching and learning situations. For example, e-mail, World Wide Web, CMC could be considered educational technology. Videoconferencing and audioconferencing may also be considered in this category.

Face-to-Face - Institutions that provide education that is not at a physical distance from the students; the students and instructors face each other in the classroom setting. The abbreviation for this definition is F2F and will be used in place of the phrase itself.

Feminist Pedagogy - An educational orientation that emphasizes the empowerment of women. There is an emphasis on the connectedness of the relationship of the knowledge developed so that women may gain a sense of being able to effect change in their lives (Tisdell, 1993, p.93). Feminist pedagogy describes the processes and the teaching methods which encourage a connected learning environment. In this environment, learners share knowledge that has been developed from personal experiences and from sharing collective knowledge making of others.

Gender - Ways in which society organizes the roles of males and females and the subsequent expectations of behaviours for those roles. (Sex, however, defines the category to which a human is assigned at birth based upon biological differences.)

Learning Technologies - The term currently used to describe the tools and processes that employ computer aided technology in the teaching-learning environment. The use of the term is considered to be reflective of the computerized learning environment.

On-Line Learning - Formalized educational course content such as readings, assignments, references, and resources are directed to those students

who have access to a computer network and can receive this information via electronic media such as e-mail, list servs, World Wide Web (WWW), synchronous and asynchronous chats, CMC, and bulletin boards. Synchronous chats defines communication that allows interaction between the sender and the receiver simultaneously; for example by telephone or videoconferencing. Asynchronous chats refer to communication in which the interaction between sender and the receiver are not simultaneous; for example, e-mail or a facsimile message.

Self Efficacy - The self awareness and understanding of one's own abilities to manage change in all areas of the learning domain. In this study the change is also related to technological change in learning for adult female learners.

Traditional Institutions - Those academic institutions that provide higher education in a more conventional mode. Students are physically present on a campus or building site and they partake in face-to-face sessions. Usually the sessions are led by an instructor or expert in the subject area who is physically present and who lectures to all of the students at one time. Students may also be engaged with other students in learning situations such as laboratories or practica.

Women's approaches to learning and knowledge building - Some women may learn in ways that are not normally associated with the acquisition of knowledge as defined by the hegemonic educational structure. The learning can

include extensive use of personal experience, collaborative learning and connection to a more holistic view of understanding.

Summary

As the education of adults evolves in its methodology of teaching, technology has begun to play an ever increasing role. The ways in which adults are encouraged to learn may now include learning tools that allow communication that does not require F2F engagement. Learners and instructors are introduced to the computer and its uses for information dissemination. The roles in the teaching and learning transactions are changing.

Using CMC as a learning tool is viewed by many as a positive method for all students as they use the communication tool in a collaborative and community building manner. This is an important learning outcome that must be considered if deciding to use computer conferencing. However, learners must be able to use a computer to be a part of the on-line community. For women, whose use of computers is generally less than males, computer conferencing appears to respect learners as individuals and does not present pre-conceived ideas of behaviour based upon society's expectations. If the proponents of CMC are correct, then females who learn best in a collaborative, communicative mode will reap the benefits of computer conferencing. My examination of the premise follows in the next chapters.

Organization of the Thesis

The role that computer mediated conferencing plays in learning for adult female learners is the focus for the research. In the following chapters I will examine the comments of the experiences of a group of seven female learners using a technological learning tool.

In Chapter Two, I will review the current literature concerning computer mediated conferencing, education of adults, and the role of women in using technology in learning. Although the literature concerning women and computer conferencing is not extensive, I include information pertaining to women and face-to-face learning as well as women and on-line learning. The chapter also includes data about theories that pertain to adult learning

Chapter Three presents the method by which I collected data and the research mode under which I organized and assimilated the data from the seven participants. The findings from the interviews are examined in Chapter Four, including themes that emerged from the data and my interpretation of the data.

In the final chapter, conclusions are drawn from the findings. The possible implications for the teaching learning transaction with adult female learners is discussed and recommendations for action are suggested.

CHAPTER TWO

REVIEW OF LITERATURE

"It is obvious that the values of women differ very often from the values which have been made by the other sex...it is the masculine values that prevail."

Virginia Woolf, A Room of One's Own, 1929, p. 76

Introduction

The literature review examines women and gender issues in the realm of education. Most specifically, it examines the role of technology, that is to say the technologies that relate to communication that is filtered by a computerized system, in higher education as it has evolved from and with the conventional face-to-face environment. Using distance education as a point of entry for technological learning tools, the chapter concerns itself with women's experiences with technology. Using computers to acquire information and knowledge can pose barriers for females in terms of access and self efficacy. The review also examines adoption of innovation generally and with technology specifically.

Although literature regarding women, computers, and technology is not extensive, the review suggests that gender issues remain in on-line learning. The positive phrases used to describe computer mediated conferencing as a form of communication are questioned.

Review of the Literature of Learning and Technology

Due to the burgeoning growth of instructional technologies, traditional institutions are reevaluating and reconsidering their positions vis à vis the use of instructional technology tools (Albright and Graf, 1992; Daniel, 1996; Laurillard, 1996; Pelton, 1996; Tait, 1998). Different media and different methods of presenting information must now be taken into consideration with respect to learners and instructors alike in the dissemination of knowledge (Duchastel, 1996; Pennell, 1996; Ryder and Wilson, 1995). The introduction of computer based technological tools in a higher educational setting can result in a myriad of responses and behaviours for the learner.

Ryder and Wilson (1995) were able to delineate positive and negative outcomes for the learner with the introduction of technology into a university level programme. The authors suggested that one of the major barriers for learners is the adjustment to technology and learning to incorporate a new learning environment that may not be the traditional face-to-face into one's way of knowledge making. A learner's adoption and adaption to an innovation is influenced not only by feelings of self efficacy but also one's past experiences with innovative procedures. As stated earlier, change may induce feelings of anxiety and tentativeness which in turn may affect the ways in which the change process is mitigated.

As convergence of technologically delivered methods of teaching and learning unfolds in more traditional institutions, a student may now be applying

these tools to his or her studies while physically attending a traditional institution in his or her own geographical location. The learner may be using the technology for the very first time, attempting to adjust to the technical aspects of knowledge seeking. At the same time, the instructor may be learning the best application of the learning tools in his or her teaching.

The most common linkage to the use of the technological tools is the computer. The use of the World Wide Web (WWW), computer mediated conferencing (CMC), e-mail, list servs, asynchronous and synchronous chats, and bulletin boards is predicated upon the access, usage, and skill with which a learner uses a computer and ultimately the success with which the educational technology facilitates learning.

Until recently, the use of learning technology has been more prevalent for distance educators and learners who were separated by a geographical distance. Moore and Kearsley (1996) used the following definition of distance education in order to delineate its characteristics within the larger realm of education:

> Distance education is planned learning that normally occurs in a different place from teaching and as a result requires special techniques of course design, special instructional techniques, special methods of communication by electronic and other technology, as well as special organizational and administrative arrangements. (p. 2)

However, with the rapid changes and constant improvement in telecommunications, the traditional institutions have been adopting learning

technologies not only to address the needs of distance learners, but also as an adjunct to traditional face-to-face settings.

Higher education exhorts lifelong learning as an integral component of assisting adults in an " integration of living and learning" (Garrison, 1989, p.107). As such, there is a movement to reach out to learners where they live and engage them in learning. Learning tools may encourage this relationship as they become more readily and more easily accessible and available. The lines of distance education and education for adults are blurring rapidly with integration of delivery and methodology. Distance education can become a choice for more adult learners as the methods of delivery converge.

The convergence and its attendant issues for institutions, instructors, and learners are in an early stage of development. There are issues and concerns that transcend merely deciding the technological characteristics of information dissemination. What are the barriers to access for the learner? How will the course of study best be presented to the learner? One must consider the electronic methods available and which ones will encourage or facilitate learning that suits the desired learning outcomes. As convergence is in its early stages, traditional institutions are attempting to determine the methodologies and specific technologies through which learners will maximize learning and personal development.

Adult learners in a traditional setting have been the subject of decades of literature research. In Canadian adult education, one is able to trace our roots

back to the early 1900s with the Antigonish movement and its leader, Father Moses Coady. Adult education was written predominantly by males such as Tough, Knowles and Houle to list a few of the pioneers and it delineated the ways in which knowledge was acquired. For adults, this meant learner-centered education, building communities of learners, and being self directed in the quest for education. By comparison, the psychology of the adult learning was written by and primarily represented the adult male. Freud, in the late 19th century and early 20th century, Kohlberg in the 20th century for example, described how the dominant male in our society was socialized and ultimately how knowledge was formed by males. Females were included in these analyses as adjuncts to men with differences of development that were viewed as lesser than that of the dominant male. As the male behaviour was viewed as the norm, any behaviour different to the norm was designated as deviant. When women were not found to conform to the norm, their actions were viewed as deficient or deviant.

The current and developing environment of all learners using technology in the face-to-face settings has been neither studied nor analyzed extensively. Using technology in higher education settings is still in its infancy. Most theory is derived from the conventional face-to-face environments.

However, the development of technology and computers is directed primarily by men (Spender, 1994; Turkel, 1996). The male educator is the dominant force in the development of technology as more males than females develope software and more males are enrolled in computing science faculties

than women. (Statistics Canada, 1997) It may follow that the female perspective in learning technologies is viewed similarly to the traditional face-to-face settings. That is to say, women will may not be part of the dominant force and therefore, their ways of developing knowledge may not be honoured. Even with innovation and change in face-to-face elementary and secondary levels, the complexity of educational change is daunting as "the forces reinforcing the status quo are systemic" (Fullan, 1991, p.xiii).

Distance Education and the Female Learner

The existing research suggests that one should be aware of possible issues concerning the technology; there can be negative affects to successful outcomes for a female distance education leaner. For example, Burge (1998) listed fourteen guidelines which could enhance the learning situation for women who learn via distance education. She terms these guidelines "women friendly guidelines" and has based these guidelines on two major assumptions. The first is a commonly accepted adult education principle that :

(a) adults strive to attain " a sense of personal autonomy and competence"..(p 36) and the second is,

(b) "that any guideline is limited until one understands how issues operate in specific context" (p 36).

Among the fourteen guidelines germane to my study are those that:

- accept diversity among women.

- acknowledge studying at home may cause struggles that include other family members.
- acknowledge that many women will develop a practical use or orientation to the use of technology.
- monitor the possible negative effects that may arise when women incorporate technology for the first times.
- include monitoring and assisting all learners to fulfill their development (pp.38-39).

These guidelines should be considered when attempting to engage female learners in using a learning tool in a face-to-face setting.

Similar conditions for women in distance education have been delineated by other writers (Faith, 1988). For example, the societal expectations are expressed as additional familial responsibilities and can form inbalances in the access and use issues for females. Women who study at a distance are more likely to require greater flexibility when undertaking a programme. However, these requirements may not be reflected in the curriculum of distance education as Faith (1988) stated that curriculum "continues to be dominated by patriarchal constructions of knowledge". (Page 13)

Adapting and Adopting to Change and Innovation

To enhance the successful use of technology, one must be aware of the cognitive effects that can influence how well adaptation to something new is diffused and incorporated and the extent to which the role of personal self

efficacy is a factor in acceptance and use (Bandura, 1995; Olivier and Shapiro, 1993; Rogers, 1995). The learner frames his or her chance of successful learning by past learning experiences, coupled with societal expectations for his or her gender. If one's self esteem and pleasure are enhanced, then learning is more likely to be positive and rewarding (Zemke, 1996 cited in Dewar, 1996). Bandura (1995) postulated that one's self efficacy will influence the quality of the learning experience and the style with which learners will approach new tasks and new methods. If learners and more particularly female learners, are influenced by societal factors that dictate roles within a learning community, then their self efficacy and computer usage may not be strong and consequently, access and usage of learning technologies may be reduced or at the very least, delayed.

When a new concept, method, or innovation is introduced to potential users, recipients, or members of a group, there are categories of acceptance and adoption of the innovation. Rogers (1995) describes categories of adopters of the innovation in five categories with each category associated with a particular set of behaviours. Figure 2.1 illustrates the categories to which Rogers refers.

Adopter Categorization

Figure Caption

Figure 2.1 Adoption of innovation among members of an organization.

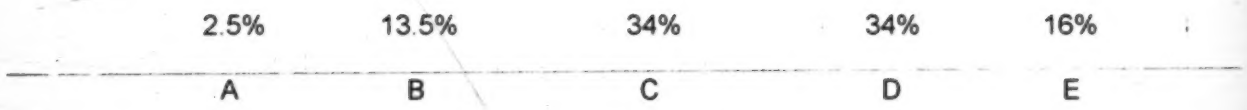
A Innovators - launches new ideas into system.

B Early Adopters - decreases uncertainty about new idea by adopting it.

C Early Majority - deliberate some time before adopting.

D Late Majority - skeptical and require convincing.

E Laggards - resistance to innovation; past is point of reference


2.5%
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A
B
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D
E

Moore (1991), as quoted in Daniels, (1996) developed a " technology adoption life-cycle" (p. 88) that defined and illustrated groups of adopters. This cycle is represented in Figure 2.2.

Figure Caption

Figure 2.2 Adoption to technology innovation.

A Innovators - enthusiasts who like technology for its own sake.

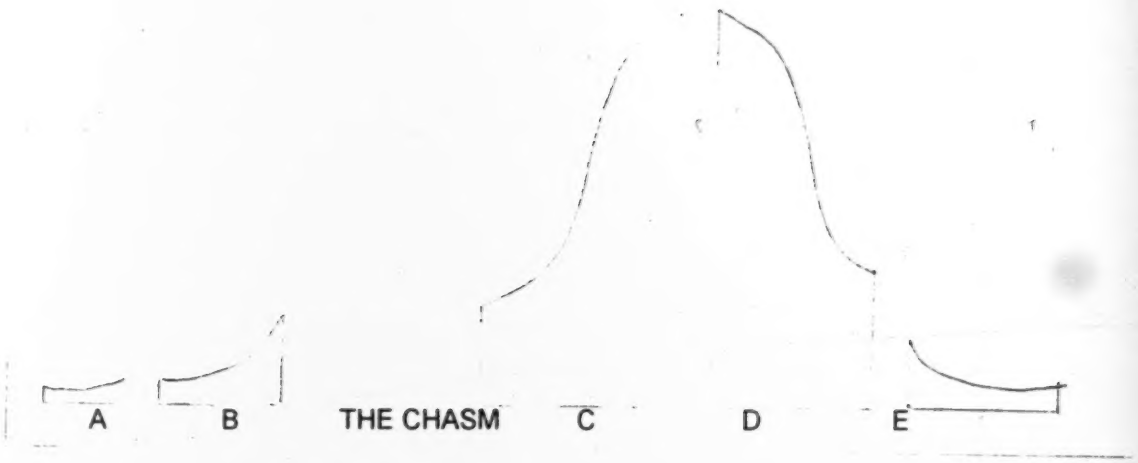
B Early Adopters - have a vision to adapt an emerging technology.

C Early Majority - do not like risks of pioneering.

D Late Majority - dislike continuos innovation and believe in tradition.

E Laggards - do not engage with high technology.

THE CHASM - important time gap in technology adoption between early adopters and the early majority.


A
B
THE CHASM
C
D
E

In Figure 2.1, Rogers (1995) has described categories of group members and their reactions to and adoption of an innovative concept or process. Individuals do not necessarily accept or adopt innovation at exactly the same rate as their co-members. For changes to be said to have taken place, behaviourial change must be seen and something new had to have been learned. Rogers chose to illustrate the categories by using an S-shaped curve that explains the adopters in each time period. The curve rises slowly, accelerates to its highest and then displays fewer and fewer individuals adopting the change.

This parallels his findings in groups on the workplace. There is a group of members who champion the new idea or concept and very early see its merits and possibilities for use. With their enthusiasm and opportunities to encourage other members who are strategically placed within an organization, the early majority will see the benefits of the change and lobby other members to incorporate the change. The later majority will not accept the innovation until they have seen it for a longer period of time and have had opportunities to evaluate the innovation. However, the final category termed the laggards tend to use the past as their reference point and are not likely at any time to accept the changes.

In Figure 2.2, Moore has finely tuned Rogers' ideas of adopting innovations to one of adopting technology. Moore contends that the adoption of technology follows a bell or S-shaped curve as well. He also states that there

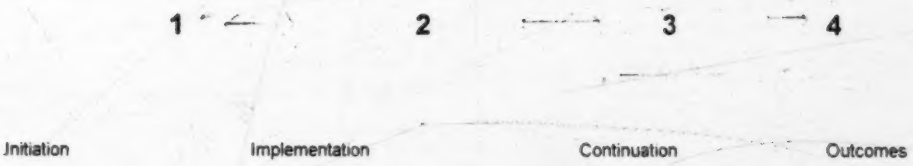
are time lags among the members, which are represented by the gaps in the curved line. Moore finds an important gap represented by the chasm between early adopters and the early majority. The acceptance of the technology by the early majority is viewed as important in terms of students accepting and using technology in an institution. The time delay can mean serious problems in financing technological change in an institution if the adoption rate is particularly slow. Money invested in computers and software may not be used well and to its fullest extent thereby reducing the level of use of the technology before it has been fully exploited.

The process of change as it relateds specifically to education has been described as, "change is a process not an event" (Fullan, 1991, page 41). the process that Fullan delineates reflects the elementary and scondary schooling systems. However, the constraints and affordances are equally applicable to the postsecondary setting. According to Fullan, the change process can be represented by the diagram in Figure 2.3.

Figure Caption

Figure 2.3 Simplified Change Process

1. Initiation - someone defines, initiates change for whatever reason.
2. Implementation - involves the first experiences of attempting to put an idea into practice.
3. Continuation - beyond the first year and whether the change becomes part of the system or not.
4. Outcomes - the results as defined by the change process itself.


1
2
3
4
Initiation
Implementation
Continuation
Outcomes

In the change process, Fullan acknowledges the complexity and the multivariate factors that are at play. The teacher, the student, the parent, and the school board are all players with vested interests in promoting or not accepting change. In Figure 3, the multivariate factors are at work within each section of the process. The two directional arrows between boxes informs us that the process is not unidirectional; it is not a linear process that one is able to delineate easily and without returning to review and to assess that which may have been decided and implemented earlier. Also, the process is not instaneous in its outcomes as Fullan stated, "deeper meaning and solid change must be borne over time" (page 73).

From the perspective of my research, all three figures could represent the majority of the institutional members and the introduction of a technology based learning tool. Change is concerned with many variables included in which may also be variables of gender and societal expectations of roles. There are no differences stated that deal with the gender of the members. Are there more men in the early stage and if so, are reasons for that based on the dominant role of males in the technological society? Are women hampered by additional barriers or demands from our society in terms of role expectations? Do women appear in all categories of adoption or are they more likely not to be early innovators based upon their previous role in technology and training? There appears to be room for ongoing research that is focused on differences in learning based upon the gender of the participant.

Adult Education and Learning

Learning is also predicated upon relating the knowledge of earlier tasks to subsequent knowledge building; the potential that these experiences have had in enhancing or interfering with learning are mitigating factors (Bandura 1995, Dewar 1996 , Knowles 1980). Adults have a reservoir of experience which can be called upon as a resource for learning. With this rich reservoir of experience, the learner attaches more credence to those activities that allow learning to be gained through action and not passive acquisition of knowledge. Adults will be ready to learn when that experience will allow them to cope or interact with tasks and problems that are based in real-life situations. Adults want to be able to apply this knowledge and skill in order to live more effectively (Knowles, 1980).

From this base of understanding of the adult in face-to-face settings, educators attempt to plan programmes that reflect the understanding of adult needs and requirements. For example, a physical environment must be conducive to learning and it should make the adult feel at ease wherein no fear of ridicule exists. Adults strive to be self directed in their development and as such, programmes should consider the special needs of the adult and arrange learning that builds upon itself and incorporates practical instructional techniques such as discussions, group work and role-playing. Many theories of adult learning do not always differentiate between male and female learners. The literature suggests that there may be differences in the ways in which females develop and acquire knowledge (Belenky, 1986; Gilligan, 1982; Herring,

1994). Women do not form the majority of the learning society and as such women are not always regarded as having a perspective which is considered the norm in terms behaviour and actions.

Gender Differences

There are differences in the roles played by males and females in today's society, which are for the most part, constructs of that society and products of the socialization which defines roles, responsibilities, and capabilities (Lorber, 1994; Tong, 1989). Gender is a complex construct and at times the patterns of inequities are not always recognized as the continued practice within the educational systems has internalized some of the patterns of assumption; for example, boys are strong in mathematics and science while girls are strong in humanities. We may infer therefore, that there may also be differences in the ways in which females organize and construct knowledge and understanding which may not be recognized as valid as the females do not necessarily form part of the dominant influence (Gilligan 1982). Gilligan's book, In a Different Voice illuminated the different methods by which the authors viewed women and their psychological development. It became apparent that the roles cast by the dominant group in society, males, were not necessarily those that described how women sought their own truths and enacted values within a society. If there are differences in the psyche of women from men, there may be differences in the ways in which females interact with technology and computers and ultimately in their construction of knowledge and learning.

Some writers in the field of adult education (Merriam and Caffarella, 1991; Stalker, 1996) state that adult education tends to encourage the status quo and to reinforce the dominant role that is held by one group within a culture. The social system is maintained and reproduced under the guise of adult learning. It is suggested that the mode of delivery perpetuates the differences of the classes. It appears that men are more likely to employ their own methods of learning, thereby perpetuating the gender differences (Jarvis, 1985 as cited in Merriam & Caffarella, 1991). One must be alert to the idea that the education of adults is written from an androcentric perspective and that there appears to be a male bias in most educational theories and teachings (Stalker, 1996). If these biases exist in the F2F educational setting, then there is a possibility that biases exist in on-line education as the dominant role is held by the males. Females are underrepresented in science and technology faculties as well as in the software development field (Statistics Canada, 1997). Therefore the biases in F2F may continue in an on-line setting.

Beginning with elementary schooling, most female learners in a traditional face-to-face setting must deal with biases concerning their construction of knowledge. Their abilities and skills are constantly being defined based upon her perceived role in society (Magolda,1992; Sadker and Sadker, 1994). These biases continue in terms of more scientific subjects, including computer science, which are primarily male dominated even in today's postsecondary institutions. Recent American studies (Astin, 1996) suggest that

there are modest increases in faculties that are normally associated with male students rather than female students, such as engineering and natural science. When one studies the numbers and converts information regarding ratios and numbers of student enrolled, there are actually fewer females in these faculties than more. Apparently, there are also fewer males enrolled in these faculties than previously. The apparent increase of females students is due to a reduction of numbers of male students. Female students are primarily enrolled in the historically female studies such as education and allied health fields that include nursing. These statistics reflect, to some extent, Canadian university enrollments. In 1996, 12% of all students in technology and science programmes were females, up slightly from 1986. Thirty-one per cent of all graduates were male which was down slightly from 1986 (Statistics Canada, 1997). Although the number of university graduates rose faster for women, only 34% of all female graduates were in the science and technology faculties; this was an increase from 28% in 1986 (Statistics Canada, 1997). However, the message appears to be that changes for females may not have progressed as much as one would have thought. The fields of computing science and mathematics remain male dominated with the attendant lack of recognition of the female leaner and her needs (Knupfer, 1997).

Although computer training is offered to school age females, the literature suggests that most of the instructional design favours a male dominated view

and ultimately, excludes the female experience (Collis, 1991; Knupfer, 1997; Moore, 1986).

Recent studies of school-age girls and boys (Culley, 1993; Pryor, 1995; Reiner & Plomp, 1993) illustrate that there are significant differences between the sexes in perceptions about computers and use of computers. Boys are more likely to be positively disposed that girls to using computers and more likely to have home computers. Although girls are capable of performing well on computers, they are more tentative about their skills when expressing confidence in copmputer abilites. This trait of tentativeness appears in adult women too. As boys are more likely to have home computers and use school computers more frequently, girls familiarity with computers is further reduced. In the classroom boys tend to cluster around the computers and to be involved with the teacher who is more likely to be male. The girls on the other hand have few female role models to encourage participation.

There appears to be a different learning approach to computers and software as well. The boys persist in learning new software by a trial and and error method that encourages manipulation of the keys and mouse. Girls ten to enjoy working in groups in a co-operative mode and are less persistant in attempting learn the new technology. Their method of learning is perceived differently. Girls see the computer as a tool and want to develop a more holistic view of the learning situation. They appear to prefer relating computer usage to a practical situation with consequences. Therefore, the ways in which

computers are set up for learning may be problematice for learning (Brecher, 1989).

These tendancies by girls and boys at an elementary or secondary school stage appear to continue into the structuring of computer use for adult learners. Women tend to learn from an holistic framework; what are the consequences of doing something wrong? The schematics of instructions and directions may also be a barrier for women. Most women have little exposure in building topy models etc. as boys may have had as youths (Brecher, 1989). This lack of schematic experience also plays a role in computer skill development as the boys can more easily conceptualize the structure of the software requirements and with trial and error, proceed to use the computer frequently.

Adult women learners may appear tentative when developing skills to use the learning technologies and thereby limit their usage and development of expertise in the technological areas. This reinforces a previous comment made by Burge (1998) that the computer is a tool for women through which they can accomplish a specified goal. The computer is a machine and not a wondrous thing to be exalted. As cited in Spender's book Nattering on the Net (1995), women view computers in a different light.

> Women usually want to accomplish specific tasks when they sit down at a keyboard. They are looking to save time, which makes them less tolerant round snafus in software and hardware, such as messages with endless variations of modem strings, or system configurations. Plus women just don't have the time to waste. According to the Department of Labor, 58% of all American women worked outside the home in 1993, while they also still perform the lion's share of household chores and child care.
> p.190

Based on previous experiences and timing demands, the female learner may not totally engage with the computer tool and its software, thereby temporarily reducing full access to the capabilities of the tool. These comments mirror closely the experiences of girls and computers.

Statistics Canada (1997) reported that in Canada, married women with children who work full time, spend more time (4.8 hours/day) in unpaid work such as household chores or caring for others. They do not have a significant amount of extra time in which they can play with the computer for recreational or academic purposes.

CMC and Women Learners

Belenky et al (1986) stated that some women learned best and synthesized their own knowledge in a face-to-face setting, when the learning was collaborative, non-competitive, non-linear, more holistic and where one is accepting of personal experiences as worthy sources of knowledge and information. Women generally work well in groups as a sense of collectivity and community are enhanced, which is an important factor in their deliberation of issues and questions. These observations were made in the seminal work by Belenky and her colleagues in Women's Ways of Knowing (1986) which established norms for many female learners in a postsecondary setting.

It would appear that some of the characteristics that were defined thirteen years ago are now ascribed to on-line learning and the use of some technological learning tools. Collaborative learning is said to be one of the most

important outcomes of computer mediated conferencing. On-line communitites are forged using a CMC communication tool. Collaboration in learning is also one important variable for many female learners in a traditional setting. It would appear that computer conferencing closely resembles a quality of female learning. However, this statement requires further study as women and the use of computers is an important factor in the process of communicating on-line.

Computer mediated conferencing is exhorted as a positive tool for knowledge building that incorporates many of the traits attributed to women's knowledge making. It is the flagship for computer communication. Harasim (1995) explains that CMC is a wonderful learning tool that encourages collaboration, builds community on-line and opens access to a variety of learners who may chose their own timing to engage in communication. CMC affords the learner the removal of tacit identity cues such as age, sex, and other identifiers that may be labeled common for a gender to exhibit. This should facilitate a more equitable learning environment for all learners regardless of gender.

As CMC usage increases, a greater understanding of its capabilities are required to determine whether these claims of reducing gender issues on-line are valid. First, one must examine the definitions that are used in this medium that relate to definitions that are used for the ways in which some women build knowledge in a face-to-face setting. Harasim (1995) defines collaborative learning as "an interactive group knowledge-building process in which the

learners actively construct knowledge by formulating ideas into words that are shared with and built upon through the reactions and responses of others" (p.4). Lauriallard's definition (1993) is modified due to computer usage:..."but it is acquiring a special meaning as it is used mostly now to refer to students working on a computer-based learning program that requires them to collaborate by, for example, taking different roles, operating different controls etc." (p.267). Her definition is shaped around the use of the tool with the learners which is manipulated in order to share information and discussions with other learners. It would appear that some women may indeed discover that collaborating on-line may mirror their experiences in a face-to-face setting. Written communication is not without its own forms of discrimination and exclusion (Yates, 1997). These suggestions will be discussed later in the thesis.

CMC and Gender Issues

There appear to be changes in the area of education of adults as it is evolving with the ever increasing usage of CMC. These shifts would appear to be more accommodating for a variety of learners, including female learners. However, very little information is specifically written concerning issues of gender in the learning technology area. Chua (1997) states

> Frissen (1992) notes that what is striking in terms of research into new information and communication technologies is the absence of gender discussion on the research agenda. She refers to the research by Golding and Murdock (1986) which outlines how the new communication media replicate existing structures of inequality.
> (p. 3).

The small collection of research that has been conducted specifically to investigate the possibility of gender bias yields examples of the dominant culture overriding the non-dominant culture. Susan Herring (1994) discussed that the introduction of the learning technologies did not automatically reduce or erase gender issues. CMC participation was initially thought of as without gender identification and also allowing and encouraging equal access to the questions and the response mechanism. CMC is also touted to develop reflection skills and critical thinking skills as users tend to reflect on what has been written and then carefully compose responses once the author deems the response acceptable for posting. Using non verbal means to communicate between and among humans may also lend itself to the development of finer writing skills. Conference participants must be able to posit their thoughts and opinions in well though out phrases and sentences as the removal of tacit cues that may assist in interpreting the communication are missing. The onus of communicating clearly

rests on the writer's ability to communicate all of the nuances and meanings of an issue or thought in a written form. Tannen's research (1990) has shown that discourse between men and women is different. Linguistical differences between the sexes is evident in many areas; for example, choice of vocabulary, expressions of ideas, and conversational style. Tannen posits that girls and boys grow up " in what are essentially different cultures, so talk between men and women is cross cultural communication" (p.18). Given the dominant role that males play in society in general, the female role in discourse is considered mal-adaptive based on the inference that male discourse is the correct method of communicating.

Continuing with face-to-face discourse and extending communication to an on-line setting, patterns of discourse and attendant issues of dominance are evident. Writtne discourse appears to continue the gendered roles played out in off-line convesation.

Herring's studies (1994) of academic listservs and comments and the roles of both male and female participants illustrated a continuing theme of male dominance in the virtual classroom. Herring was able to give examples of "flaming" that were apparently used exclusively by males. (Flaming is on-line intimidation by hostile and negative verbal means). She described different styles of communicating that were more attuned to the current societal context in which we operate:

> The male style is characterized by adversarial: put downs, strong often contentious assertions, lengthy and or frequent postings, self-promotion and sarcasm. The female-gendered style, in contrast, has two aspects which typically co-occur: supportiveness and attenuation.

pp.3-4.

The women of the academic listserv also tended to respond less than their male counterparts (10%-15% of total) even when the subject matter related specifically to females. The women were usually co-operative and polite in their exchanges, thus mirroring the societal expectations learned in early schooling in a face-to-face setting and early socializing.

Spender (1995) suggests that women will be drawn to the use of on-line forms of communication once they see "the communication potential of the computer" (p.192). Her analyses of literature regarding listservs has demonstrated the inequities in use. Spender confirms that Herring's review of listservs was not encouraging in terms of adult females and access to the discussions even though I have already related the positive characteristics that are used to describe the development of community. For example, even when topics were related to feminist issues, men tended to dominate the postings and write the longest compositions of all participants. Perhaps additional study and curriculum development are required to ensure that the adult female does indeed share in the on-line society. At this juncture, the communication potential for female learners may not be fully realized. Maureen Ebben and Cheris Kamarae (1993) are cited in Spender (1995) and comment: "We acknowledge the powerful potential of new information technologies, but we also are painfully aware that many of these potentials have yet to be realized" (p. 195).

In Turkle's book (1995), Life on the Screen Identity in the Age of the Internet an environment that reflects modern society is being developed and

shaped with the increasing use of on-line learning and interaction. Turkle states that males have dominated the computer culture since the 1980s and she sees no real indication that that is changing significantly. However, she shows some optimism from a broader context: "a classical modernist vision of computer intelligence has made room for a romantic postmodern one. At this juncture, there is potential for a more welcoming environment for women, humanists and artists in the technical culture" (p 63). Spender contends that males and females exhibit unique styles of communicating, with some females being more comfortable with a "soft approach" to their societal stances. Many women and girls are interested in the development of personal relationships and the interconnectedness of communities. Men, however, tend to dominate conversations both on-line and in traditional settings. Men dominate on-line and in cyber space and currently, men do form a higher ratio of users than females (Spender, 1995). The ratios between gender appear to be reinforced in the cyber space world that is emerging. Males tend to dominate cyber space even with the descriptions that the communication aspect may have some emancipatory awakening for the female learner. As Spennemann (1996) concluded, "they (computers) are a symbol not just of technological progress but of power and male power at that" p.236.

Summary

In summary, my readings continue to pique my curiosity as the aspects of and the access to on-line learning emerge, evolve and reshape themselves.

The issues that have followed women as they struggle to have their voices heard in face-to-face settings may have the potential for being heard on-line. However, one must first agree that there are issues of access and use to which attention must be paid and that is a difficult task in itself. Traditional institutions to date have not always recognized that diversity may exist amongst the learners. The proponents of CMC are very optimistic about the learning outcomes that can be realized with its use. Again, caution must be exercised to ensure that learning institutions do not merely transfer the phrases that describe positive interaction rather than the actions themselves.

CHAPTER THREE

METHODOLOGY

"Voice is natural and also cultural. It is composed of breath and sound, words, rhythm and language. And voice is a powerful psychological instrument and channel, connecting inner and outer worlds."

In a Different Voice, C. Gilligan, 1993, p. xvi

Introduction

In Chapter Three, the methodology of the study is defined. The design and reasons for choosing the design are discussed as well as the process itself. By detailing the sample and its characteristics, the contact procedures and the data collection, and analyses, the process will illustrate reliability and transferability of findings.

Design

A qualitative research case study design in the interpretive, naturalistic approach was employed. The foundation of the analysis rested with each individual's perceptions and views as discussed in the face-to-face interviews. Qualitative methods as discussed by Berg (1989) focus on "naturally emerging

languages and the meanings that individuals assign to experience" (p.11), and therefore, researchers "share in the understanding and perceptions of others and to explore how people structure and give meaning to their daily lives" (p.7).

A personal interview was conducted in order to discover through discussion the meanings of the respondents' use of CMC. The interview format was semi-structured in that there were several main areas of questions that dealt with learning and the use of technology. (Refer to Appendix D). The core questions were used at the beginning of each interview in order to facilitate rapport building between the interviewee and me. The questions I deemed essential for each interview were usually the first questions to be asked. Probing into the issues surrounding the pre-determined areas of discussion allowed for individual answers to questions and consequently, provided individual insights. These questions focused on issues of computer experience, usage, and training. The remaining questions dealt with learning experiences in a F2F and on-line setting.

Prior to the actual research, a pilot study was completed with one respondent several months earlier in which I was able to gain experience and insight into the research interview process. I was able to finely tune the questions while eliminating others. Although the pilot participant was a graduate student, she was not enrolled in the university from which I gathered the sample. Her experience in on-line learning and the use of technology had been within the past several years and she had expressed an interest in participating in the

research. Upon completion of the pilot study, I was more focused on the interview questions and the process.

Sample and Data Adminstration

I interviewed seven female adult learners who were enrolled in a graduate programme in a large western Canadian university. This was a purposeful sample as I wanted to contact adult females who were using or had recently used CMC in conjunction with face-to face-graduate studies. The students were enrolled for either Winter, 1997 session (January to April inclusive) or Winter, 1998 (January to April inclusive). The respondents also lived within 15 miles of the institution, thereby allowing contact and interview arrangements that were convenient for me and the interviewees. As the students were also working full time and all, with the exception of one, had family commitments, timing of participation was a mitigating factor.

All female students for the two graduate course offerings were contacted by e-mail after the completion of the term of Winter, 1998 to obtain participants for the research. (My original sample was to have been drawn from a graduate class that was to have taken place in Spring session of 1998. My methodology would have included a face-to-face solicitation of participants in the class after having received approval to do this from the instructor. However, the class was cancelled and I had to resort to an e-mail solicitation of volunteers.) In total 24 e-mail requests were sent to engage potential interviewees. I was granted access to the class lists by the professor who had taught both classes. I sent

the initial request to all female students on April 20, 1998. Those students interested in participating were invited to contact me by e-mail, by telephone, or by regular mail should they require additional information. No one contacted me by telephone or regular mail. Of the 24 e-mails, three were returned to me stating address changed and unknown; one e-mailed that she was unable to participate at this time; seven responded affirmatively and 13 recipients did not acknowledge my e-mail.

My original e-mail request (Appendix A) contained a summary of the research that I was conducting, the process of the research itself, and an approximate time commitment required from them. I also stated that I would explain the ethical requirements of my study in more detail at our meeting and face-to-face interview for those respondents committed to the research participation. For those who volunteered, a confirmation e-mail or two or three e-mails were sent until a mutually agreed upon date, time, and location of the interview were set.

Once the interview was set, an outline of the topics and possible questions within those topic areas prior to the arranged interview was communicated. (Appendix B). I did this in order for the respondents to have time to reflect generally upon their educational experience and their experiences using a technological learning tool. As some of the respondents had finished a course the previous Winter term (Winter, 1997), I thought that it was important to

encourage them to reflect on the course and try to remember their reactions and recall their thoughts concerning learning and computer mediated conferencing.

At the beginning of each interview, I explained my research and the consent form and informed them that they could withdraw from the study at any time for any reason. I then asked each participant to read and sign the consent form (Appendix C). I then began the formal interview process and asked each participant to explain what was the best situation for learning for her in a F2F context.. Once we had discussed this topic, I focused on her experiences using computer mediated conferencing in the respective course. The participants were willing to discuss their thoughts and opinions concerning their learning when they were using FirstClass Client; the interviews were open, frank, and appeared comfortable. Holding the interviews in a familiar location plus my extensive interviewing experience, helped to make the sessions enjoyable and informative for all of us.

Data Collection

I was the only person involved in collecting the data, using audio-taped interviews and transcribing the tapes. The interviews took place over a three month period from April 30, 1998 until June 2, 1998 and all interviews, with the exception of two, were held in the work offices of the participants. This allowed the learners to manipulate their time schedules successfully as they were also employed full time and had family obligations. The two remaining participants were interviewed in a private office on the campus of the university. This

location suited them as they were frequently on campus and familiar with the location. All information was retained in a secure location in my home office to which only I had access. There were separate files for each participant that also included the signed consent forms (Appendix C).

Each participant had access to her own transcript upon completion in order to review itand make any suggestions for change or correct errors or omissions. Six of the seven participants were interested in reviewing their own transcripts. Only one participant had any suggestions for change and this was a minor wording change which was made. The transcriptions that were requested were either e-mailed, mailed, or dropped off at a convenient location for the participant. All interviewees were also given copies of the interpretation of their comments prior to final inclusion in the thesis.

I e-mailed the relevant sections and requested an answer. I explained the areas of my analysis that I would use the quotes and asked for confirmation of my interpretation. All participants agreed with my interpretations. Member checking is an important variable in maintaining reliability of data and for providing an audit trail.

At the end of each interview, when my questions and foci had been discussed, I offered the participants an opportunity to add comments or thoughts that perhaps had been missed in the interview or had not been thought of by the respondent prior to the interview itself. This interlude allowed me to share information concerning my research and to the inform the respondents about

areas of research that they may not have previously read. In this way, all respondents and I were able to share our thoughts as well as feelings and to connect as fellow female students, not merely as researcher and interviewee.

There was also an element of active research as I discussed feminist pedagogy or gender issues with the participants and informed them of my areas of concern. That is to say, I shared my literature findings and my thoughts about female learners in order to stimulate thought and perhaps reading on the part of the participants. I was not proselytizing, merely informing and sharing.

For each interviews, I maintained a log in which I wrote comments, perceptions, and personal queries directly after the interviews. The log assisted me in deciphering possible themes as the interviews progressed and allowed me to find commonalties of comments as well as differences. As I re-read the comments that I had transcribed, I re-read the log notes for the participant and attempted to use my on-site comments in conjunction with the written comments. The log also acted as a personal journal as I had recorded my thoughts and impressions and the development of the journey of research. I was also able to note any patterns or trends to refresh my memory at the conclusion of the interviews. It also encouraged me to reflect not only on my research, but also on other aspects of education and the demands on adult women's lives.

As an aide-memoire, the log was helpful when coding the transcriptions. Once again, my comments immediately after the interview remained fresh in my mind and key phrases and words that I had written helped me to determine what

the themes might be. I had chosen the semi-structured interview approach as according to Berg (1998, p.61) because not only are there predetermined questions but also "interviews are permitted (in fact expected) to probe far beyond the answers to their prepared and standardized questions. Researchers thus approach the world from the subject's perspective" (p. 62).

Data Analysis

Upon completion of each interview, I transcribed the audio tape and printed a copy for reading. I re-read the transcript several times attempting to identify categories of meanings. For that purpose I used coloured highlighter pens to colour comments that seemed to be similar in all of the transcripts. For example, a pink highlighted passage denoted female learner issues and a yellow highlighted passage meant barriers to learning and so on. After that, I was able to determine if there were common threads that could be grouped under several headings. I used inductive methods to assign comments to categories. As Glaser and Strauss (1967) stated, it is important for analytical induction to analyze the data and also to consider the integration of the theory that may apply to the question of research. Berg also comments that

> to experience include emotions, motivations, symbols and their meanings, empathy and other subjective aspects associated with naturally evolving lives of individual and groups. As Schwartz and Jacobs (1979) suggest, many of these elements are directly observable and as such may be viewed objective. Nonetheless, certain elements of symbolism, meaning or understanding usually require consideration of the individual's perceptions and subjective apprehension. (p.11)

By attending to some of the commonalties, I was able to describe some broad categories in which these could reside. For example,

1. Women's role in education
2. Self efficacy
3. Women Learners
4. Feminist Pedagogy
5. Instructional Design

However, this categorization did not preclude the attempt of understanding or looking for themes that may not be so easily categorized. For example, the role of both the instructor and the institution introducing technology was noted. What the learners decided would be necessary for them to easily adjust to the transition of the technology and for them to be able to garner the most for their learning experience were also recurring themes. My findings will be given in more detail in Chapter Five.

In conclusion, an audit trail and transferability of findings including the following was established by the methods used in the research:

- pilot testing
- member checking of original transcript and analyses of their data to ensure correct interpretation of their thoughts
- more than one reference document, that is to say an interview and a log of each interview.

The next chapter presents the findings and the assessment of the interviews. The themes that emerged are illustrated by direct quotes and references to the literature.

CHAPTER FOUR

FINDINGS

"The change from atoms to bits is irrevocable and unstoppable"
Being Digital, Negroponte 1995, p.4

Introduction

In this chapter, I shall discuss the comments for seven women within the context of the major theme areas that emerged from the interviews. In my quest to discuss the application of CMC in an academic situation with adult females, I discovered that there were findings that I had expected, those that I should have expected in retrospection, and those findings that were unexpected.

Background information

The information in Table 1 presents the factual background of the participants and gives us information concerning their computer experience prior to entering the graduate class in the Winter session of 1997 or the Winter session of 1998.

Table 4.1 Background Information of Participants

Name. Age Range	Term of Study	Degrees Held	Experience with Computers	Computer Usage	Family Background
1. *Mary. 31-40	W'98	B.A.. M.Ed student	13 years	4 hrs/day work and home	1 child. pre-school
2. *Leanne. 41-50	W'98	B.Ed.. M.A.. M.Ed student	2 1/2 years	daily at home	3 children. school age
3. *Louise. 41-50	W'98	B.Ed. Dental Hygiene. M.Ed student	3-5 years	5-7 days home and office	2 children school age
4. *Heather. 31-40	W'97	B.Sc.. M.Ed student	11 years	daily at home and office	2 children. 1 preschool. 1 school age
5. *Claire. 31-40	W'97	B.A.. Post grad dip.. M.Ed Student	17 years	daily at home and office	no children
6. *Elizabeth. 41-50	W'98	B.A.. postgrad dip.. M.Ed Student	10 years	occasionally at home	1 child university student
7. *Jean. 41-50	W'97	B.A.. M.Ed student	15 years	daily at home and university	2 older children

* All names of participants have been changed

Of the seven participants, three were in the age range of 31 to 40 and the remaining four were in the age group 41 to 50. As each participant was in graduate school, all of the interviewees had at least one degree at the undergraduate level, with two participants holding other graduate degrees. All seven were married and six had families of one or more children ranging in age from pre-school to university level. Three had completed the CMC supported

course in the Winter of 1997 and four had completed the course in the Winter of 1998. A majority of the participants, six of the seven, had five years or more computer experience with some formal and informal computer training in areas of programming to word processing. Four of the seven women had more than one computer at home with Leanne having the largest number, three home computers.

Themes

My original purpose for researching was concerned with adult female learners and the use of computer mediated conferencing. I wanted to discover whether or not computer mediated conferencing enhanced the learning environment of women. Encased within the purpose were sub-questions that dealt with self efficacy and computer usage for women and whether or not collaboration is fostered in the learning environment that uses computer mediated conferencing, which in this case, was FirstClass Client.

After reviewing all of the transcripts, the following major topic areas or themes emerged. The major areas of questioning which included learning styles and preferences in both a F2F and on-line environment, self efficacy and computer usage and feminist pedagogy, lead to the clustering of the themes. In the following pages, each theme is discussed in depth. The six major themes which emerged within the major question areas are as follows:

- adult learner principles
- women's roles and issues in adult education

- learning styles: face-to-face and on-line
- outcomes of computer mediated conferencing: positive and negative
- instructional design
- self efficacy

(As I had introduced the topic of feminist pedagogy into the interviews, I will discuss the comments after the six themes have been presented

Adult Learner Principles

At the time of this study, as all of the participants were enrolled in the Master's of Education Degree in Adult and Higher Education, it came as no surprise that they were conversant not only with the terminology but also the theories that surround the practice of adult education, primarily in a face-to-face situation. One of the tenets to which adult educators adhere, revolves around an adult making his or her own choices about educational goals and outcomes. Based on personal lives and work situations, the adult learner will chose an educational goal that is focused on needs drawn from those two significant areas. Coupled with an educational goal is the need for information to have some practical application, some transferability to the real life of the learner.

Mary is a part-time student and full-time employee plus the mother of a four year old child. She is in an extremely demanding position in the health care field and when I was arranging an interview with her, we had to work around her upcoming conference presentation in Europe. Mary was very open and willing to share her thoughts and opinions in a candid manner. For Mary, a practical

application of a programme was very important and she stated that she is more oriented to information that is useful to her rather than theoretical information only:

> If the professor can give some practical application to what he is talking about, be that examples of how to relate to what I am actually doing in my work setting. There is nothing worse than going to a course and having everything be theory. ...I mean, I love learning but the learning has to have a purpose behind it and if I can't see a direct outcome to something tangible and then I ask, why am I doing this?

The practical element of learning also had a corollary effect for one interviewee, Louise, as she discussed her own learning experience when using FCC. Louise's experience with FCC was not positive as she was on-line only once during the course. She was not able to access easily the comments made by others and found no assistance in the computer laboratory when she was having software problems. She used this learning experience to determine what would work better for her own students should she introduce conferencing to her classes. Her analysis of the learning situation was what she carried from that element of the course.

> So, you know, though I had a terrible experience that I hope would translate into a better experience for my students as I know where my frustrations were so I can avoid that. I hope.

Again, the practicality of the learning event appears to be important for the adult learner; it also can be important for those learners who are currently engaged in instructing as well. How can they use the experience to its best advantage in the future?

For Heather, who administers a health care related organization, the process of using CMC in the class was considered from the view point that it was another way of learning that may be incorporated into her own work setting:

> But for me it was just exploring another way of learning and because as part of my research I have been looking at professional organizations that mentioned that they are using FCC to offer distance learning. And they have study groups looking at case studies. It really helped me a lot to learn a lot better and how that is working.

It does appear from these comments that the interviewees were not only thinking about using these systems for their own personal growth and knowledge but they were also able to discover the applicability of the learning for other situations in their work lives.

Adult learners are generally highly motivated and usually combine a variety of activities that include not only working, but also family or other significant obligations. For all of the women whom I interviewed, with the exception of one, Claire, there were children and the attendant family obligations to fulfill. The element of time was stated by many as so crucial in the organization of work, school and personal life. It was apparent that the "to-do" list for the participants was lengthy and time consuming. The requirements as an employee took up most of the day, then family commitments and usually in the evenings, the educational component had to be satisfied. As Louise stated and about which all women commented in one form or another:

> Part of the barrier was time and I think that for women that is almost a given.

Time for completion of assignments and the use of the computer and FCC were recurring themes that will be discussed more in the roles in adult education of the female learner. Although time can be a positive issue of access given the unrestricted time element of CMC, unrestricted access means access at the end of a busy day or very early at the beginning of a busy day. This means that the female learner will then be able to put more tasks into an already filled agenda.

For some adult learners it may be very important to listen to and analyze the comments of other students in a face-to-face setting. Several participants commented that they needed to hear the thoughts and or the comments of their colleagues in order for them to process any new information and to form knowledge for themselves. There were similar comments from the interviewees that using CMC was not as fulfilling as they thought it might have been; that is, they missed seeing their colleagues and being able to read the non-verbal cues that come from body language and tone of voice and facial expressions. Seeing the tacit cues of verbal communication were important for them in order to analyze and to synthesize the information and form knowledge that was meaningful for them as individuals.

For several of the participants, the face-to-face element and a formalized classroom setting in an institution are conduits of social exchange and to which they look forward. For a few hours every week, they were able to leave physically the work or home environment and interact with their peers in a social as well as academic setting.

> I don't actually have a problem if I come into the university for a course. I don't live far and I have funding for baby sitting ...and so for me, coming to the university for a course is a break and a different atmosphere.

Leanne made these comments and she uses the time in classes to have an interlude away from the family commitment of caring for and educating a daughter with learning disabilities. One could work at more flexible hours if connected to FCC at home, yet the social element for her was not necessarily being fulfilled by CMC.

Mary reiterated a similar comment that going to class was a social interaction as she had friends in class.

> Yeah I am a very social being and I like to have that face-to-face interaction... But for me, going to class was important because I had some friends in the class, it was partly social.

Mary concluded that she didn't think that the social aspect helped her to learn as she also had social interaction in other areas (such as her job) so her personal need could be filled though other venues. This is a consideration for instructors and learners alike and is discussed in Chapter Five.

Leanne and Mary made these comments after one experience and interaction with FirstClass Client. It would be interesting to determine if the comments are modified after completion of other courses that included computer mediated conferencing. For the participants who had previously used another form of conferencing (Heather, Jean, Claire), the experiences appeared to be less discomforting than their colleagues. However, not one of the participants

was convinced that on-line learning was a medium for which they would forsake face-to-face learning.

Womens' Roles and Issues in Adult Education

Literature concerning women and computer usage has shown us that the adult female leaner may face some barriers in timing and access to the computer (Burge, 1998; Spender 1995). The interviews were enlightening in this area and actually reinforced some of the access issues. Although not all of the participants used FCC at home, the students in the Winter '98 course were able to delineate how its use was both a help and a hindrance in their learning. The following comments about using FCC and its role as a help or a hindrance were mentioned in the majority of interviews and illustrate that there can be two sides to the story of computer use as a learner-mother and employee. The first comment deals with the extensive list of tasks with which the interviewee is charged.

An extensive to-do list. All of the respondents in this study with the exception of two also worked full time and had families at home. There was apparently no reduction of tasks or duties but rather the computer usage would be added to the list as yet one more item to consider each day. For Louise, using the computer would often take time away from other required duties:

> And there were other types of barriers as it took time away and somewhere it is unwritten that women shouldn't come home and sit in front of a computer. They should cook and clean.

Although Louise said this in an ironic tone in the interview, she was expanding on the view that using the computer had its own set of barriers in a family setting as it took away from what the household members saw as her role. Louise made some other insightful comments concerning her role as not only an employee and a learner but also as a mother. Louise realized that her time on the computer was later at night if she did not institute a timing schedule for her husband and two sons:

> Because it seems that unless I had a schedule, then my time for the computer would come at 10:00 o'clock at night and unfortunately my mind shuts downs at 5 minutes to 10:00 and I can't think right.

> I was reading about interesting articles about women and technology and how there are so many barriers for us using it and I read this thing and it was really talking about women in developing countries, but I read it and I thought, check, check and I am not in a third world country. But yeah, I get last chance on the computer and after reading this article that is when a I made my schedule for everybody in the house and who could use it when.

Louise demonstrated that women's use of the computer met with barriers that can arise from one's personal life. She continued to describe her feelings of the combination of student and mother in terms of using the computer to complete work:

> ...I allow interruptions and you are never at the same level of thought. And I don't know if my household is a reflection, but when I am sitting on the computer, I am fair game and that is OK because they (her sons) are growing up really fast. When B., my husband brings home work to do you just don't go near Dad tonight as he is working. And I recognized that this was happening, but it was also by choice. I also want to give my children the message that my work is not more important than they are.

For these women there may be potential barriers of access and timing with the home computer as there are competing requirements from family members and the course requirements. Flexibility of access should be present with the home computer and timing of use is not predicated upon the schedule of an institutions and hours of a computer laboratory. However, interruptions from families are a consideration.

The respondents were able to determine that there may be a certain flexibility that is afforded the user through a home computer. Being able to have the flexibility of access was seen as positive from the perspective that one could access the course information after one had completed all of the other duties as an employee and a mother. The interviewees thought that being able to go on-line at home at 11:00 p.m. or in the early hours of the morning was a plus for them.

> The other thing that I find very attractive about the computer, because I have to keep a flexible schedule in all time, I can go to class when I need to if it is 10:00 o'clock at night and everyone happens to be asleep and no one is sleepwalking and falling down the stairs or whatever, then I can do that.

Leanne, who is on leave from her job as a special education teacher to continue her education, stated earlier that she enjoyed the social aspect of the face-to-face class and liked leaving her house for the different environment of the class. However, she also realized that computer access at home granted her some flexibility with assignments after the household duties were completed. The flexibility of CMC for the women I interviewed was not instead of some other

tasks that are forgone, but rather as an additional step in the student role. The access issue can be viewed from two different perspectives; home access is a positive measure for continuing learning while at times it can be a barrier as the family members know that the learner is on site and can be interrupted while completing assignments. This is an important consideration in instructional design and will be discussed further in Chapter Five.

Learning Styles: face-to-face and on-line

The following statements summarize the comments that describe how the participants prefer to learn in a face-to-face educational environment. For the most part, the learners prefer:

- interactive experiences with lectures and learning activities with colleagues.
- practical, hands on learning with practical applications
- to be independent learners who collaborate with works of others.
- to learn with visual cues; the need to see the information and have someone explain it to them. Some require written information such as notes and hand outs.
- to learn in an auditory style which is a formal lecture format with discussion and seeing other learners making comments.

As we can see, there are major categories of preferred learning styles within the traditional face-to-face setting.

When the participants were questioned about their learning using CMC and whether or not it met their learning needs, reactions were mixed with some

interviewees being able to adapt their learning style to CMC and others stating that the CMC methodology did not suit their learning style. A comment that was made most frequently related to the visual cues that one used in learning: the participants wanted to be able to see their colleagues and the visual unspoken cues to which they have become attuned in learning. Removal of those tacit cues of body language, tone of voice and facial expressions was not acceptable to Elizabeth. Elizabeth is an adult educator in the field of English as a Second Language where tone, accent, and pronunciation are vital in learning another language. She was reluctant to use FCC and perhaps her background explains this for us:

> ...But, yeah, I couldn't see it for them (ESL learners), I prefer to look at them and see what they are saying and correct them and talk to them.

Elizabeth continued voicing her concerns about the usefulness of FCC. She didn't want to spend a lot of time reading the comments of others as her time to do this was limited especially because she had to use the computer lab on campus to access FCC.

Jean had extensive experience with computers and on-line learning. This was however, her first time for using FCC and she had no problems with the software. Jean had explained that she is primarily an auditory learner, so for her, those important cues were also missing. Her secondary style is visual and FCC could provide some of those cues, although she too thought that being able

to see a colleague was important. Overall, using FCC was a learning experience.

> I looked on it as a learning experience; I looked forward to it as a learning experience but I am not sure that I enjoyed it. There were learners who thought that using CMC could

complement and even replace some of the conventional face-to-face attributes. For Mary, an interactive, practical approach facilitated her learning. Using CMC could fulfill that requirement:

> I think that it basically fits in and because I can take things off the web and interact with it and it's a different interaction than with a human being but you are still interacting and still doing something, you know you are still typing or writing, it is still the same.

Heather, who listed herself as primarily a visual learner, thought by using CMC her needs would be accommodated well. The format of using FCC worked well for her as

> Yeah, because everything stays on-line until the owner deletes it and you can go back and review or re-review somebody's comments. A lot of times you could go through and say so and so said this and you can go back and check this. And that is reinforcement over and above the verbal communication.

In Heather's case, experience with computers was more extensive and varied than Elizabeth's as she had used other forms of CMC in a graduate class that was devoted to exploring the Internet and other forms of on-line learning. Perhaps her familiarity with conferencing allowed her to use the software at a different level of comfort.

Outcomes of Computer Mediated Conferencing: Positive and Negative

Given the variety of depth of experience with computers and CMC of the participants, the following observations of using FCC in an adjunct role to face-to-face instruction are divided into two main categories. These categories reflect what the learners saw as positive and negative in terms of use and value to their learning experiences. The factors are important to consider when developing a course with CMC.

Positive Outcomes. Many participants stated that using conferencing encouraged them to concentrate on writing skills in order for their comments to be easily understood by all readers. Being able to reflect on the comments of others prior to responding was viewed positively. The participants said that they could go in-depth to analyze the comments critically even sometime after the event. As there was more time to reflect on comments, it was noted that there was more to think about issues as there were usually more students responding than there would be in a face-to-face setting. As Claire explained:

> I certainly know my colleagues in the class and what they are thinking and I feel more comfortable in approaching someone and that is interesting.

The quieter student or a student for whom English is a second language may prefer to conference on-line rather than face-to-face. The student may take the time to ensure proper grammar is used and feel more comfortable using English. The quieter student may feel less pressured in a setting where comments can be

considered prior to posting. The other class members may learn more about this quiet member than previously. Claire explained:

> You got to know more about your colleagues than you would before. I am quite confident that that was the case. I wouldn't have had known people in the classroom who were very quiet or some students with a second language.

As the comments are in a written form, not verbal form, the conferencing record can capture group work notes if group assignments are required that may otherwise be lost in a strictly verbal discussion. The comments that were posted on-line provided a written, archival format for later review. Consequently, the participants noted that there could be even more opportunities to clarify and to challenge comments as participants could take the time to review the comments at their leisure.

The interactions amongst these learners and their classmates was also viewed as changing due to the use of CMC. There would be fewer opportunities for group domination by one or two learners in conferencing although those who considered themselves "techies" or those who had extensive computer experience (usually male) tended to write more. (In the class of Winter '97, only four participants were male of 33 students and in the Winter '98 class there were three males in a class of 22. Comments were made that some of the self professed "techies" would write copious notes that took several screens to display. Some of the participants confided that they did not always read the entire comments as they found them to be too time consuming. Claire stated

that using CMC also prolonged the contact with her colleagues and at times, conversations on-line would continue long after the course had officially ended.

The issue of flexibility was also noted as important: flexibility of access if downloaded on home or work computer and consequently, flexibility of choosing the time to use the computer to fit into a busy schedule as evidenced in the comments in an earlier section.

The participants stated that they needed and wanted to see the comments of their colleagues as they could evaluate their own opinions and knowledge against a backdrop of many opinions and comments. This was important for them in order for them to asses the validity of their own opinions in their own repertoire of knowledge.

These statements demonstrated that positive uses for CMC included aspects such as accessibility for their personal use as well as development of rapport with fellow students that may not have developed in a face-to-face setting. These seemed to be important for some of the interviewees as this extra element of experience or opinion from a colleague enhanced the development of their knowledge. Previously, a student may not have had an opportunity to hear comments from all classmates. In a face-to-face setting, having access to all of your colleagues' comments was not always possible due to a variety of reasons.

Negative Outcomes. The following comments relate to the negative aspects of using computer mediated conferencing as determined by these participants. In some examples such as flexibility of time and the changing relationships for the

learner in the teaching - learning transactions, the negative findings mirror the opposites of the positive comments. Paradoxically, conferencing can be both positive and negative for the same issue; for example, having the flexibility to work at home may be reduced by interruptions from the family who are also at home.

Comments were made by most of the participants that centered around the differences in communicating and what they thought was lacking in conferencing. The participants missed the tacit, non-verbal cues such as body language and tone of voice that they used to assist them in understanding comments in a verbal face-to-face discussion. Apparently, the face-to-face situation would encourage a synergy that could spark discussion. Claire explained this by saying:

> Well, I think that it is more dynamic (face-to-face). Unless you can create that on-line, that synergy or whatever you want to call it, it is exciting at times and the discussion is happening right there, the body language and it is hard to replicate the voice control, how do you use your voice? So that part of the communication I would miss.

If there is a synergy that arises in the face-to-face setting due to the inclusion of tacit cues, then conferencing may impair the spontaneity that sometimes is evident in encounters and thereby reduce the spark of discussion that arises from the immediate comments of a colleague or instructor.

With the concern about writing well for a posting, came the added comment that the extra time taken to do this, could actually be a negative consequence for conferencing. It was thought that the extra time could add a

burden to already complete schedules plus perhaps even more importantly, spontaneity could be inhibited. It was also thought that using the extra time time adds to an already long list of commitments and tasks. For Claire, an additional two hours a day was added to her studies as she read all comments, analyzed information and formed her comments for on-line sharing. Claire also stated that as she was a full time student at the time and not working, that she had the luxury to do this whereas if she had been working, her time on FCC would have not been as extensive.

Although having comments in a written form that remains active for a period of time was viewed positively from one perspective, another participant, Jean, stated that she was uncomfortable with leaving her thoughts on-line. Who sees them, who reads them, and just who has access to the conferences? How long do the comments remain there?

> I found myself being very inhibited by the experience because and I don't know whether this is anything to do with the fact that I was a former civil servant and you were very careful with what you put down in writing.

Claire stated that she saw the relationship of the learner within the teaching - learning transaction as changing. New boundaries appeared to be forming and were both positive and negative.

> I think that I was a little bit nervous as I had not done this before with classmates at university and you would go to class and go home and not have that much contact with classmates. So it was going to carry the classroom outside of the normal hours or time slot so that was going to change the relationship with my colleagues and it you are uncomfortable with your writing style or just beginning to learn how to write well for that level, it is a

> bit uncomfortable. I was uncomfortable going on-line with some of my thoughts.

There was a hesitancy to discuss all concerns and opinions as one may feel uncomfortable with writing skills as well as possibly revealing more about oneself than previously revealed in a traditional setting.

Finally, a comment was made that even with the extra time for composing postings some discussions were not to same depth as face-to-face. In an attempt to be succinct plus learn the technology, comments could be less academic, less thoughtful in nature. This could be a concern for instructors and designers using conferencing in order to maintain a level of academic rigour or sophistication.

The above listed comments revealed two dimensions that could exist simultaneously for the positive and negative aspect. Accessibility at times could be negative as more time would be consumed to first read the comments of colleagues and then compose replies after reflection. In other instances, it could be positive as one could complete work from home and at times suited to the learner's personal schedule.

The relationships of students also evolved as the interaction could take place more easily after class hours and when students would not normally be in contact with each other. For some students, these changes were positive, an extension of class time and continued thoughts about course content. For others, there was the dimension of additional personal time conversing about the class more than once a week in a classroom setting. It was a matter of

perception and feeling comfortable with changing boundaries. It was also evident that the some of the learners were at the beginning of experiencing CMC and they were more aware of integrating the software requirements into the transactions than the critical elements of learning.

The adaptation to the technology relates to both Rogers 1995) and Moore (1996) categories of individuals in their adoption of an innovation. It also underlined the importance of dealing with the process of change in an educational setting as described by Fullan. With the interviewees, there were varying degrees of integration and acceptance of the learning tool and its applicability to their personal learning needs. The learners who were new to this situation may require additional experiences to judge fully the impact of the conferencing in their student and work lives. The design of interaction for all levels of learners would be a consideration for the instructor and the learner to ensure maximum educational outcomes were achieved for a variety of levels of computer expertise.

Instructional Design and Learner Requirements

My interviews were informative in one aspect of using CMC that I had neither expressly considered nor for which had I incorporated a question. Through the range of experiences of the participants, it became evident that there are instructional design considerations when introducing a technological instructional tool into a face-to-face setting in an adjunct role. As more traditional institutions and learners alike have access to these tools, information regarding the development of the instruction may become more common place and the programme design will be well thought out.

However, based upon my interviews, there were inferences about good design and direct comments about how the learning experience may have been made more meaningful. The issues of instructional design that pertain to female learners do appear to include the issues of accessibility and ability to develop a comfortable level of skill with the computer. Another issue is the ease of transition from a face-to-face setting with its attendant tacit cues to an environment that uses written cues only . These considerations will be discussed in more depth in Chapter Five as suggestions for operationalizing the comments from the participants.

Self Efficacy

Women who have successfully engaged in advanced studies and who work outside the home as did the majority of these participants, did not find many obstacles at work or at university that seemed insurmountable. When

asked to describe the ways in which they approached an issue or assignment about which they were not fully knowledgeable, all of the respondents stated that they ask questions and attempt to arrive at a solution. They will not give in and walk away from the issue. Without exception, these participants thought they had high levels of efficacy based upon understanding their own unique abilities and skills. If their present skills were not comprehensive enough to solve a problem, then they commented that they would question others and acquire the knowledge required to effect closure of an issue. The participants also assured me that a similar approach was invoked when confronted with computer or technology that was different or unknown to them.

In the original research statement, I was interested in the notion of self efficacy as it related to computer usage and particularly female computer users. The literature delineates the factors that contribute to positive self efficacy in face-to-face settings (Bandura, 1995 ; Zemke 1996 as cited in Dewar, 1997). The major studies that have been conducted on self efficacy and computers have found that those with a higher sense of self efficacy tended to be high achievers and able to overcome negative reactions (Olivier & Shapiro 1993). However, more studies are required regarding gender issues and technology as the area is lacking extensive coverage in the research literature.

It was interesting that the interviewees stated that they were not daunted by the use of CMC. However, after having said that they made some comments

that suggested that this may not be the case in all instances. For example, given the option of attempting to download FCC at home, Louise stated that;

> ...and nobody could download at home. So I listened to all of them and I didn't even try. Not one of them and there were five and one of them teaches computers at (a college) and he couldn't get it down. And you know what, that was truly time wasted and my frustration level was really high. But in the end, out of a class of I think 18 of us, 2 people managed to get through the whole programme and were actually talking to themselves. It was sad. So, that was my experience with FCC.

Hearing these comments from others, especially those considered to be expert computer users, Louise did not attempt to download FCC and after one unsuccessful attempt in the computer lab. She did not connect with the conferencing aspect of the class.

There were similar comments from the other participants. It is difficult to determine without additional study, if computer use lowered notions of self efficacy. Suffice it to say, the levels of self efficacy and computer use for females requires additional study. It is also difficult to determine with this research, if self deprecating statements concerning computer and conferencing issues are related to female learners only as they reinforce some of the patterns of attenuation and self doubt that can also be found in the traditional face-to-face learning settings.

The general self efficacy of these participants appeared to be high; however, self deprecating comments made when engaging the technology would suggest that levels of self efficacy may fluctuate with technology usage. The comments centered around doing something stupid with the computer and

having someone else correct the mistakes. Some of the participants thought that they had done something to the computer if they had problems accessing FCC at home or in the lab as they thought that everyone else must be able to figure things out and that they were just too stupid to understand. These denigrating remarks made about themselves appeared to demonstrate lower self efficacy with computer usage.

Feminist Pedagogy

The category of feminist pedagogy was one that I purposefully introduced at the end of the interviews. Listening to seven participants, I was interested to hear about their discoveries as females in a traditional academic setting. Admittedly, I also wanted to share my readings with those who were interested in hearing about them. As one of my committee members and I had discussed early on in this process, I could inject an element of active research. That is to say, I could inform those participants who were interested about the literature and findings concerning women not unlike themselves. I was not there to proselytize, merely to inform and to encourage reflection if so desired. I thought that the evolution of feminist pedagogy was linked to my research as I believed that the barriers females face in a traditional learning environment were to be repeated with new learning tools. In our western society, women do not form the dominant group in a hierarchical structure and as such, the educational experiences of some females is predicated upon what is thought to be best for

all, when in fact, those methods might only reinforce the status quo and a hegemonic society (Merriam & Cafferella, 1991; Stalker, 1996).

I saw a link between the status quo of a traditional setting and what could easily remain the status quo with fancier learning tools. However, when I asked the participants about their thoughts concerning feminist pedagogy, I was somewhat surprised that only two participants were familiar with feminist pedagogy and the effects of gender in a learning situation. The remaining five participants inquired about my findings and readings and for the most part, did not think that any forms of discrimination based upon gender had been part of their schooling or indeed their lives to date. What occurred to me was realization that the biases that do exist may not have been critically analyzed at this juncture of their lives. To me, there were incongruencies in what these women thought was non bias and how they incorporated technology in their learning.

For example, Heather has had many years of computer use with both formal and informal training opportunities. She stated with some deference of tone and vocabulary that her husband is the computer guru who fixes her "stupid mistakes" and downloads software for her, such as FCC, without her having attempted to manipulate the software initially. There appears to be an automatic deference to the male when matters deal with computers even though Heather's skills are well developed. To continue with Heather's comments, it is interesting to note that she evaluated herself as being mathematically and

scientifically oriented as a child. She did well in the sciences and mathematics in high school and was an honours student and enjoyed these areas. However, upon entering university, she chose a career that is predominantly female in its orientation in a health related profession.

Claire was one of the participants who stated that she was informed about gender issues. She, like Heather, stated that as a child, she was considered a "tomboy "and did not play with "girls" toys. Also, upon entering university, she enrolled in a Bachelor of Arts programme with no particular direction in the mathematics or sciences area even though she enjoyed these subjects in high school. She too had extensive computer experience and training; however, she will defer to her husband whom she categorizes as an expert. if she had problems with software.

To illustrate another example, nearly all of the interviewees commented that as they were forming their thoughts and opinions in a traditional face-to-face learning setting, they wanted to know the thoughts and opinions of others before making a final statement that reflected their knowledge. There appeared to be a tentativeness in making statements unless those statements were validated by the statements of their colleagues. Elizabeth stated the following:

> ...as I really like to hear other people's views and discuss or challenge, things like that. In some ways, if they agree with me, then I know that I am not the only person who is thinking that way..

Claire made the following comment:

> ...and I think that is why I enjoy being in a classroom as I get to hear what others have to say and it validates my learning and what

> I think. "...Well sometimes I would think that and obviously I missed the boat on this or I didn't get that out of the conversation and I don't understand this theory.

The validation could be construed as the attenuation concerning their own thoughts and opinions that some females display in a learning environment. On the other hand, it could be considered that some female learners seek a variety of opinions in order to be clear about any factors that may affect their decision making. In some instances, either interpretation would be valid dependent upon the situation.

In relation to computer use and conferencing, I found that the interviewees demonstrated attributes that the literature suggests is commonly found with women. For example, women tend to write less on the computer (Herring 1994), and try to be polite and thoughtful of others opinions and feelings (Spender 1995). Being aware of how others may perceive the information ensured that any references that may be upsetting or misconstrued were re-written or removed. For example, Heather made these comments:

> We had one class mate in particular who and I didn't realize until I talked with him personally, that he would interpret written messages differently than I had intended. ...and after that I was very much sensitive how I worded things and time to think about how it might be interpreted on the other end.

Jean stated the following:

> So, before I said anything or wrote anything down, I thought well I had to be very careful and I had to compose my thoughts and I don't want people to misinterpret me or get mad or misunderstand so I had to really think it out very carefully. It wasn't a very spontaneous discussion as you would do face-to-face...

Jean raised an excellent point about the spontaneity of the transactions as one takes time to analyze a possible effect when a colleague reads your posting. Can spontaneity be incorporated in this medium? Earlier, Claire had also raised a similar comment concerning the synergy that can develop in a face-to-face setting and pondered if that could be reproduced on-line.

The societal roles assigned to gender are evident in conferencing as well. The male learners are mirroring the roles that have been so well reinforced by society in the face-to-face setting about which we are so familiar. The male students tend to dominate discussions and use language that is not always considerate of others' opinions (Herring, 1994; Turkel 1995).

However, the participants did not see that their roles as learners, employees and mothers or family members may be influenced by the norms of society in which they are members. Frankly, I was surprised at the apparent lack of awareness of the barriers that I believe existed in our learning environment as I too, was a learner in one of these courses.

In Chapter Five, I shall make recommendations for action based on the findings. Also discussed are implications for change in the teaching learning transactions and the conclusions that I drew based upon the data.

CHAPTER FIVE

SUMMARY, CONCLUSIONS, RECOMMENDATIONS AND IMPLICATIONS

"Computers don't just do things for us, they do things to us"
Life on the Screen Identity in the Age of the Internet, Turkel, 1995, p.26

Research Problem

When I commenced the graduate programme focusing on Adult and Higher Education, I was not involved in any significant way with learning tools that were technologically advanced. My experience was limited to using the more conventional methods of overhead projectors, slides and chalk or felt pens and using a work processor to type papers or organizational reviews. My on-line experience was with e-mail and the Internet. So much of that has changed since I was introduced to the world of learning technologies and encountered something new in education programming. I remain excited by the prospects of the learning tools and deeply aware of the associated issues caused by these changes. I look with interest at how society in general copes with this powerful change.

I was pleased later in 1997 when I was able to experience the use of learning tools in a graduate course. It was an eye opener for me as some women abhorred the experience and some women, like I, were intrigued and motivated to see what was happening. Given my other area of interest that concerned gender issues and women in adult education, I was eager to see the connections, if any, between the two; the barriers, the access points and the ways in which women would be part of these changes. To that end, I chose to

survey adult women and their experiences with computer conferencing. All elements for me were there: technology, learning tools, and how women develop their knowledge and understanding in this age of technology.

Therefore, it seemed a natural extension for me to investigate and analyze how other women with similar backgrounds to mine handled these changes and what they thought about the changes in conjunction with their busy lives as mothers, employees, wives, daughters, and students. I wanted to focus on computer mediated conferencing as it holds the promise of encouraging and engendering a powerful and sensitive communication medium and for some women, communication plays an important and large role in development. Also, I had experience with computer conferencing as a student and as a course assistant, being able to see the constructs of design from both an instructor's and a learner's perspective.

I was curious that the use of conferencing as a different way of communicating seemed to resemble the ways in which some women formed their knowledge. (As I have written earlier, some women develop their knowledge using forms of collaborative learning and by building a community of learners through which knowledge making takes place.) How had this happened and indeed, had it happened? Had the knowledge making of some women been recognized and was it now seen as an important and acceptable method for learning in the evolving age of on-line learning? Perhaps things were really

changing in this hegemonic society where normally the status quo was reinforced by our educational system.

The research problem emerged from those and other thoughts. Do adult female learners find that using computer mediated conferencing is a rewarding way to learn and build knowledge? Are the women able to build community on-line by communicating collaboratively through this medium? Where does computer conferencing fit into their personal learning? I also wanted to know if having to use the computer to access course communication was a barrier or a hindrance or an asset. The literature (Statistics Canada, 1996) suggested women were not the majority users of computers and that they were not a presence in the design of software and therefore, the computer might well hinder communication.

Essentially, this explains my interest and my choice of topic for the research. I thought that the information could have some implications for the future in educational design in both academic and workplace settings. The body of literature is not large in regards to women, technology, and learning. Part of this is due to the relative newness of the use of these learning tools which will be alleviated as learning technologies become more common in educational programmes. Part of the dearth of literature relates to gender issues themselves, which are not always viewed seriously. I entered the research with no pre-determined expectations and was rewarded with outcomes that I had not even considered. The unexpected outcomes and the process itself were

learning experiences for me and gave me insights that were both personal and academic.

Study Summary

In order to gather this information, I used qualitative research. Looking for meaning in numbers and seeing patterns was something that I could do and had done in past academic encounters. However, the numbers could never speak to me the way in which my participants could. I wanted to hear their opinions and share their thoughts and find out about them as women, not just as respondents numbered one through seven. To practise for the actual interviews and refine questions and processes, I conducted a pilot study with one female participant who is a graduate student at a different institution and who has had experience with computer conferencing. The pilot allowed me to test the process and make alterations that would be beneficial in the actual interview data collection.

To that end, I chose a purposeful sample of graduate female students who had recently (within the last year) used computer conferencing in a graduate class. (Unable to request volunteers in a face-to-face class setting due to timing and availability, I know that I have missed some of the experiences of women who were a little less experienced with the computer than those who volunteered.) I contacted prospective volunteers via an e-mail address. I explained the nature of my research, which had been approved by the ethics committee several months prior to commencing the research. Seven women,

four from Winter '98 session and three form Winter '97 session, volunteered to be participants and I then set up mutually agreeable times for personal interviews in which I incorporated questionnaire-like questions with the open ended and semi- structured questions. I e-mailed an outline of the topic areas of the questions (Appendix B) in order to allow for some reflection prior to the face-to-face interview. I wanted to know about their learning styles, their computer experience and how they viewed using computer conferencing. I also completed notes of impressions, questions, and analysis in a personal log that I completed after each interview. This action was helpful when searching for themes and analyzing comments.

I audiotaped all of the interviews and personally transcribed them. While doing this, I began to get a sense of some of the common issues and themes for the interviewees. Member checking was also a part of my data collection to ensure proper interpretations of their thoughts and to provide an audit trail and allow for the possibility of transferability of the findings to similar groups.

Summary of Findings

Interpreting the findings illustrated information that I may not have known before. After analyzing the data, I was able to discern that there are many areas and topics in relation to technology and adult female learners that require additional study.

From a broader perspective, there were findings that relate to my own process of discovery, throughout writing the thesis and searching for outcomes.

As I analyzed and chose themes and ascribed meaning to the information, I was also cognisant of the process through which I had worked. The process taught me that if there were a next time, I would approach the task differently. For example, I would allot more time in the interviews to discovering the themes and definitions behind collaboration and learning styles and the affect of technology in the lives of adult women.

Having said that, I shall reiterate the findings that are listed in Chapter Four and describe how my interpretations of the findings were developed. Given my personal history as an adult graduate student who returned to academic study in her forties, I was involved with technological learning tools for the first time. As my experiences were similar to many of the interviewees, it was interesting to view their perspectives in relation to mine. How was education especially that which is developing with different media being engaged in their lives? The specific summary of the findings were:

- Adult learners are engaged in a variety of activities, of which education is one. Adults display many of the traits that have been described in the literature of adults in higher education. However, the relationships in the interactions of learning are evolving and reshaping as all participants in the teaching learning transaction come to terms with the differences injected by using a different mode of relaying communication of thoughts.
- Introduction of more sophisticated technology into traditional institutions means changes for not only the delivery of information, but also for the ways

in which information can be assimilated and used. The learner, instructor, and institution alike are embarked upon a journey of change. The participants in the teaching-learning transaction expressed comments that they saw differences in the ways in which they could gather information from others and differences in the ways in which they would interact with their colleagues and instructor. Comments concerning the increased awareness of other students and their knowledge were made as the participants said that the interaction with colleagues continued throughout the days between the face-to-face classroom sessions and after the course had ended. The participants stated that these changes would assuredly change the overall interaction amongst peers and instructors.

- There appears to be a need for careful attention to instructional design if one incorporates technology into the teaching-learning situation. Much has been written about the needs of those students who are truly at a distance using technology; only a small body of literature has evolved that talks about the convergence of traditional institutions and advanced learning tools and what this means for the learner who is not at a distance but rather in a face-to-face setting.
- With convergence increasing, additional research would be interesting to determine if there are differences in uses for the learning tool if used in conjunction with a face-to-face learning environment. The literature or

findings about adult female learners and technology in the learning situation are few in number.

- Awareness of diversity is important for females and males alike. I was surprised to encounter women for whom feminist pedagogy was unknown. Most of the participants did not question their role in education nor in their personal lives. Consequently, in the field of computing science and in the areas of related technology, women are not the majority of students or designers and as such it would appear that the dominant group of males dictates the pedagogy and requirements for knowledge development. Although we have seen accolades for computer mediated conferencing and its apparent ability to build community and encourage collaboration, we still must realize that there are barriers to access and skills that may preclude total involvement by women. The interviews although few in number, demonstrated to me that the status quo and the familiar relationships of females and males in the technology related areas are strong and pervasive.

Conclusions

After having reviewed the findings, I returned to my original question and sub-questions to determine if answers had been found. I concluded that the on-line learning using the computer mediated conferencing was not a totally positive experience for the participants and it was not viewed as an enhancement to the learning. For these women, it was viewed as a learning experience from which

something could be learned, perhaps to use in their jobs: there were some positive aspects delineated by the participants.

Addressing the sub-questions, namely whether or not using a computer was a barrier to personal self efficacy and secondly, would using CMC foster collaboration within the learning environment for the women, showed me that this group of adult graduate female learners are not easily intimidated whatever the task, be it academic or in the workplace. They seek a solution that will be time and effort efficient, the result of which is that the use of a computer does not appear to be a barrier in their attempts to learn and use technological learning tools.

Fostering collaboration was not analyzed in depth in the findings. As this was a first time experience with CMC for many of the participants, building community on-line was not an objective they sought to reach, although some of the respondents commented that perhaps their interaction with students who otherwise would have been silent in a face-to-face setting had increased and that they know more about these colleagues than previously.

The final sub-question was concerned with the enhancement of knowledge building. The interviewees for the most part, were willing to try CMC in another course at a future date; however, for some of the learners, depending upon their preferred learning style, the use of CMC did aid the processes that they preferred to use when assimilating knowledge. For example, the ability to synthesize opinions on their own time prior to making comments, the ability to

have the information written and accessible after a class had ended were two of the positive processes that added to the learning experience. However, the interviewees were not convinced that the tool demonstrated a better way of doing the programme, rather another educational experience to think about.

Therefore, from the one example and one opportunity for use, the female learners did not find that CMC was a strong enhancement to their learning environment. Most of the participants were not familiar with feminist pedagogy in a face-to-face setting and they were not aware of any barriers to knowledge making as female learners.

I was able to draw other conclusions that were not necessarily reflected in the question or sub-questions of this study. On a broad scale, the notion that the traditional institutions are in a state of flux as they attempt to redefine their learners and instructional needs, was reinforced for me. Given some of the confusion in introducing a new technology tool to a graduate class exemplified that there are gaps in institutional support, instructor support, and recognition of learner support and needs. All constituents of the teaching-learning interaction require a concerted and co-operative effort in order to plan and execute the best possible institutional environment. This statement does not lay blame, but rather points to the changes that are happening in a traditional institution although there are those in all areas who are at the forefront of adoption and adaptation to the university programming.

In this transition period, it would follow, are requirements for analyses of the instructional design and delivery in order to ensure that a quality programme is delivered. There were many suggestions from the interviewees as to computer skill development within the use of the technology. As listed earlier, the students enjoyed peer-to-peer interaction when being introduced to the tool and would have appreciated follow-up sessions to discuss what they had learned and what else was needed to learn. These suggestions are intertwined with the barriers that women face in adopting and adapting to a change in the dissemination of information.

My findings lead me to conclude that there are barriers for women in adapting to a new technology. These barriers as expressed in the findings relate specifically to a woman's role as learner, employee and mother. Issues are present in access, time for review, completion of material, and family and societal constraints for women using a computer at home for academic purposes. Although the women in my study were pleased with some of the characteristics of access and timing, they were still facing issues of skill development and confidence in their own computer skills as evidenced by the comments of deferring to others as "smarter" in using the computer. If women are to engage successfully with the new technologies, then they must be willing to voice their concerns and to take charge of their requirements for learning and to believe in their own skills.

Recommendations

Having concluded that there are changes in the ways in which we as a society specifically in this educational institution will acquire knowledge, then suggestions for operationalizing the conclusions form the recommendations from this study.

I would suggest that there are various levels of action that incorporate the more personal view and those that form an integral part of a larger picture; small pieces that are requisite in the total puzzle. To that end, I think that it is important to review one's own philosophy about education and what that means in a personal light. It is important to analyze the direction in which technology is heading in our education and indeed our lives. As learners, instructors, and institutions, we must critically analyze the positive and negative outcomes to ensure that all involved are fully engaged and fully knowledgeable about the issues and the changes. We need to understand our own philosophy, opinions, and biases when attempting to make sense of the changes. With our personal direction understood, we can asses what works well for us within the larger societal context. This understanding will assist us to monitor and direct our path within the larger conventional structures to which we entrust our learning.

From a more practical orientation as we journey through these changes, we as learners need to be prepared to ask for assistance and to discuss our concerns with other learners with similar issues. We have to be prepared to at the very least, try new tools and approach using them with an open mind. We will always learn something even if it is we don't like to use the tool.

We must recognize that our role is evolving within the teaching-learning transaction and that we should be cognisant of the idea that when we are commenting on-line that we are succinct and that are comments are meaningful for others.

The instructor plays an important role as well in this transaction and I would recommend the following for consideration:

1. Ascertain the computer experience background of the learners. The level of computer expertise can be a new element in the determination of the needs of the learner and the needs of the instructor. Perhaps the instructor would require a get-to-know CMC session with monitored practice time and peer assistance.

> ... we did an assignment and one of the things was we had to do, we had to do a paper that was completely generated from on-line resources. And I chose to investigate motivation and one of the articles that I came across was how you shouldn't teach computer type conferencing without a partner. Like you should always pair up students so you should have, and it could be someone strong in computers and someone who is weak paired together. But the point is that you can act as a pair so that you have some other mind so that you can bounce ideas, if you reach a roadblock.
> Louise

2. It is extremely important to give constant feedback and encouragement for all learners but especially for those to whom the tool is new. Reinforce on a regular basis that the learners are progressing and although this will be time consuming for the instructor, it is important to the self esteem of the learners, most

particularly female learners who tend to blame themselves if there are computer problems:

> But I was going through reams and reams of data and information some from pharmacy and what had happened is that the files had not been cleared up.. I didn't know this at the time so what I was reading was not other people's answers but from a class a while ago. But of course, blamed me. They all could answer, so why couldn't I answer?
> Louise

3. The learners in this study stated that they did not want to be set up in a competitive mode with other learners while using this tool. They would also like to know for what purpose the tool is being introduced and what are the rules or protocol for exchange with their colleagues and their instructor. I would suggest that the protocols be set at the beginning of the use and that this be done together as a group.

4. If the instructor plans to use the conferencing exercise for his or her personal research, then ensure that the learners are aware of this and request their permission. As noted earlier, some learners have concerns about where the information is going and who sees it and who has access to it.

5. If the learners are predominantly female, then it would be helpful to consider the workload and commitments for them outside of the class and institute assignments accordingly without lessening the intellectual rigour.

6. The instructor plays an extremely important role in the teaching and learning transaction and should ensure wherever possible, that accessible technical support is available. This could be from the institution itself, experienced peers,

or experienced faculty members. It would seem that the female learners were particularly buoyed by the group sessions that assisted them to engage with the technology. Assistance from peers, even if they too were experiencing problems themselves, worked well:

> The night that it was introduce, we were all there as a class and we helped one another tremendously and from there on in, access to it was on an individual basis and that's where it broke down for me.
> Louise

7. As an instructor, ensure that the social element is present in the conferencing and use it. Most of the participants said they enjoyed the social aspect within the classroom setting. Perhaps there could be a separate folder for issues that do not directly pertain to the course content in which the learners could introduce themselves to each other.

8. The instructor should be conversant with the technology and to practise using it as well. This doesn't mean that you have to be a guru, but be cetain that your resources and support systems are well defined.

9. Monitor the conferences according to the protocol that has been mutually developed at the beginning of the course sessions and allow the learners to monitor as well. This should encourage proper, thoughtful use of the conferencing system.

10. The institutions themselves play a role in the teaching-learning transaction and they too should have the support required for learners and instructors alike. That means that they have the technological support to offer to the students and

instructors and that the institution is willing to expend resources to commit to this support.

11. Finally, issues of instructional design need to be addressed so that the diversity of learners is respected and encouraged. After having spoken with the women in this research, it would appear that one must consider inclusivity and recognize the diversity of learners that exist. It is no longer acceptable to dominate the learning forum with the acceptance of one way or method of disseminating knowledge as the only method by which knowledge and meaning are determined.

The information from this research, although limited, suggests that when one considers another methodology or additional methodologies of instruction which uses technology, issues that can affect the success of adult women are important. Some of these barriers were spoken by the participants and others emerged through the vocabulary and phrases that were said. More research is required that involves the adaption to and adoption of technology by adult female learners. It would appear that women are included in on-line communication, but I am hesitant to state that it is much better than what traditionally has been evident in face-to-face encounters. As technology becomes even more commonplace in western society, I am not convinced that gender issues that appear in the traditional settings of education will disappear.

Finally, as already stated, not enough is known about adult females and their experiences with the learning tools. As the use of technological tools is

relatively new, so are the current reviews and analyses of the processes. There is much research to be considered and to be completed. The issues of technology and education are fascinating and will continue to challenge us to critique what we have thought of to date in adult education and what he future may hold.

Implications

As we see more of the traditional institutions using technological learning tools to assist their learners, we will see a constant state of change within the teaching-learning transaction. The implications are far reaching for learning institutions as they attempt to analyze what the current and future needs of learners and instructors alike will be. The structures that define and shape the education of adults will be analyzed with resultant changes or alterations for all participants and partners in the learning transactions and knowledge making. There are far reaching societal implications of the use of technology and attempting to delineate a female reaction within the changes would be exciting. There will be additional skills and levels of skills to be developed for all involved in order to assist those whose skills with technology may not be developed.

Existing within traditional institutions are units of specialists who deliver assistance for the development of on-line learning. As the use of on-line learning increases, what seems different today will become the base from which learning is organized. With the study of education of adults in higher education will emerge those academics and technicians who will attempt to redefine the

roles of the adult in a changing learning environment. There will be evaluation and testing to determine the suitable instructional design and strategies that afford all learners, safe, welcoming, stimulating and fulfilling learning environments even though they may be in cyber space.

If research is examining the changing roles, then one would hope that women would be able to direct the learning that may best suit them. There may be different issues for women as evidenced by my study which will need to be addressed. The diversity of learners and their needs will have to be considered as well. The instructional design and delivery methods may configure differently in the education of adults.

In summary, it is an exciting time to be a part of the changes to our educational programmes as well to our lives in general. I think that there are opportunities for women to take hold of their learning and to insist that they are heard and their needs are addressed and fulfilled. My fear is that if women do not take this opportunity and challenge, we will not be able to participate fully in revolutionizing the educational landscape.

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APPENDICES

APPENDIX A

E-mail correspondence requesting research participants

Appendix A- E-Mail Request for Research Participants

Hello, my name is Kathleen Anderson and I am a graduate student (M.Ed) in Educational Policy Studies. I have permission from Dr. X to contact her former students in EDAE XXX for the Winter Session of 1998 and 1997.

I am seeking volunteers who would be able to act as subjects for my thesis research. My thesis is concerned with learning styles and adult female learners using learning technologies. Some of the current literature exhorts computer mediated conferencing (CMC) as a great learning tool as it encourages collaboration, encourages community and allows all to participate. These traits of learning are more commonly associated with some female learners as described in the book Women's Ways of Knowing.

I want to investigate if CMC enhances the learning of adult females and how it may or may not be more closely associated with adult female learners' perspective of knowledge making. As you and I know, to use CMC requires some computer skills.

I will be conducting one on one interviews at your convenience to ask these and other questions. The interviews will be approximately 1-1 1/2 hours in length and will be audiotaped in order for me to transcribe your thoughts and comments. You would be asked to review your comments and my

interpretations of your comments prior to inclusion in the study to ensure that I understand your comments.

All information is confidential and you will remain anonymous in the study. You may withdraw at any time from the study if you so choose.

If you are interested in finding our more and would like to consider volunteering, please contact me either by e-mail (kja@gpu.srv.ualberta.ca) or telephone 467-7128 in the next two weeks if possible. There is NO obligation to volunteer if you seek additional information from me.

Thank you very much for your consideration. It is very important to me and I look forward to hearing from you.

Sincerely,

Kathleen Anderson

APPENDIX B

E-mail Interview Outline

Appendix B - E-Mail Interview Outline Sent Prior to Interview

Here is an outline of what I would like to discuss with you. This is a guide only as I don't want to stifle any comments or thoughts that may come out and not be on the list.

I will ask some demographic type questions: age group, programme of study and level of study. Current computer use for home and work and for how long you have been using the computer. Familiarity with software packages and expertise level with various applications to get a sense of you comfort with the computer. I will also have some questions dealing with computer efficacy such as confidence in abilities, resourcefulness with problems etc. These questions shouldn't take too long and the we would get into the longer interview questions.

For example, in a face-to-face learning setting, how do you learn best? What is the best environment for you to learn? In a on-line setting such as computer mediated conferencing, what are your overall observations? What did it do or not do for your personal learning style or preference? Did CMC enhance the learning environment for you? Are you aware of feminist pedagogy relation to adult learners?

Again, this is just an outline. I will bring the letter that describes the study, obtains your approval and gives you recourse to withdraw from the study. I will also discuss issues of anonymity and confidentiality.

Thank you. My telephone number is 467-7128 if there are any changes for you.

APPENDIX C

Consent to Participate Form

Appendix C - CONSENT TO PARTICIPATE IN RESEARCH STUDY - STUDENTS

University of Alberta,
Department of Educational Policy Studies
Faculty of Education
Edmonton, Alberta

June, 1998

Dear Ms.

I am a graduate student in Educational Policy Studies, Adult Education programms, University of Alberta. As part of my Master's thesis requirements, I am conducting research into on-line learning. The purpose of the study is to consider whether on-line learning specifically using computer mediated conferencing (CMC) resembles learning that is sometimes attributed to women and knowledge making.

I am inviting you to participate in this study. You will be required to complete one interview to discuss issues concerning learning with on-line tools. Each interview, to be arranged at a mutually agreeable time, will take 60 to 90 minutes to complete.

I will not identify you or anyone else in the study and your comments will not be attributed directly to you. If at any time throughout the study you wish to withdraw, you may do so. All information will remain confidential and will be maintained by me in secure surroundings.

If you have any questions concerning this project at any time throughout the process, please do not hesitate to contact me directly at 467-7128.

If you are will to participate in this study, please sign this correspondence in the space provided below and return it to me. Thank you for your consideration and I look forward to working with you.

Sincerely,

I, (please print)_____GIVE PERSMISSION FOR KATHLEEN ANDERSON TO INCLUDE ME IN THE STUDY AS DESCRIBED

---------- ----------

Signature Date

Telephone Number 467-7128 Email - kja@gpu.srv.ualberta.ca

APPENDIX D

Interview questions Outline

Appendix D Interview Questions Outline

1. Demographical Information

a) In what age group do you fall?
20-30___, 31-40____, 41-50_____, 51-60_____, 60 plus.

b) What is the highest level of education attained to date?

c) What is your current academic status?

d) Are you currently using computers in completing course assignments?

e) For how many months or years have you been using a computer?
- home use
- school/degree programme use
- business/work use

f) Do you own a home computer? If yes, how many? Are you the only person to use the computer at home? If no, how many other users?

g) Do you use a computer at work?

h) On average, how many hours or days per month do you use the computer?

I) Do you have any formal computer training?

j) Have you used any of the following computer packages?
- programming language (Fortran, Basic etc.)
- DOS
- Windows 95/Office 97
- UNIX

k) Do you have experience with the following and if so, rank your level of expertise.

level of expertise

- text editing
- word processing
- desktop publishing
- data bases (Excel, Lotus etc.)
- statistical packages
- drawing/graphic packages

Communication Groups
- computer mediated conferencing
- e-mail

newsgroups
list servs
web page creation
any others to add to the list?

2. Questions Face-to-face Setting
a) Tell me under what circumstances do you learn the best in an academic face-to-face setting.
b) How would you describe your learning style?
c) What is the optimum learning environment for you?
d) How do you approach something about which you do not know in an academic or work setting?
e) If there is something with the computer about which you are unfamiliar, how do you approach the issue?
Computer Mediated Conferencing
a) Was this your first time using CMC? Expand if required
b) Did using CMC fit in with your preferred way of learning?
c) Did using CMC augment your learning? Would you use it again?
d) What worked for and what didn't work?
e) If it didn't work for you, why not?
f) What suggestions can you make for improvement?
g) Do you think that you collaborated with your colleagues when using FCC?

3. Feminist Pedagogy
a) Have you read anything concerning feminist pedagogy?
b) What are your thoughts or comments about gender issues in the academic setting?

4. Closing
a) Do you wish to make any comments that you feel are important and we have not had a chance to discuss?

APPENDIX E

Interview Log

APPENDIX E

Interview Log

Date	Name	Themes	
		Comments	Issues